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COLLEGE TEACHERS OF EDUCATION NUMBER

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College Teachers of Education Number

JOURNAL *of* EDUCATIONAL RESEARCH

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We have been requested to publish the papers presented before the National Society of College Teachers of Education at its Chicago meeting last February. We are glad to do this; and in order that the complete programs on "Educational Objectives for Colleges and Schools of Education" and on "Job Analysis and the Training of Teachers" may be brought together under one cover, we have decided to devote this entire issue to these papers.—*Editor*

EDUCATIONAL OBJECTIVES FOR COLLEGES AND SCHOOLS OF EDUCATION NUMBER, FEBRUARY 25, 1924

WHY EDUCATIONAL OBJECTIVES?

BOYD H. BODE
Ohio State University

The topic assigned to me for this occasion is sufficiently unusual to warrant a preliminary word of explanation. To the question, Why educational objectives? the unsophisticated or the unregenerate might, with some reason, retort, Why not? How could we have education at all, if we had no objectives? (Many hard things have been said about educational theory and practice, but the worst of these fall short of the insinuation that education is a form of absent-mindedness.) But my topic, as Bill Nye once said of classical music, is not as bad as it sounds. Its purpose, as I understand the matter, is not to furnish an opportunity to prove the need of educational objectives, which would be a work of supererogation, but to raise the whole question of

how to proceed in order to secure appropriate and effective objectives in education.

It has been argued, with considerable plausibility, that we have been far too easy-going in the past in the matter of objectives. Perhaps it would not be quite fair to say that fundamental educational objectives have been, as a rule, just a kind of New Year resolutions, formulated in conformity with the spirit of the occasion, but with no thought of taking them seriously. But it is true that objectives have tended to remain in a state of serene detachment from the every-day affairs of education. As Dr. Charters says, every writer on the curriculum "has made an arbitrary leap from the aim to the subject matter, without providing us with adequate principles such as would bridge the gap—without presenting steps which irresistibly lead us from aim to selection of material."[1] In other words, the actual selection of subject matter was determined, not by the aims, but by tradition or personal bias. The aims or objectives, then, served no very real purpose, except as a sop to vague aspirations, or perhaps as a justification and glorification of existing practice. It is undeniable that this sort of thing is a natural human tendency. It seems less congenial to use reason for the purpose of finding out what we ought to do than to justify what we want to do. As a philosophical writer has said, metaphysics consists in finding bad reasons for what we believe by instinct.

There is, however, one historical instance in which, it seems to me, the accusation made by Dr. Charters must be considerably modified. In the case of faculty psychology we have a doctrine that is exceptionally definite and explicit, both with regard to objectives and with regard to the relation of these objectives to subject matter. According to faculty psychology, man consists of body and mind. Both of these need to be trained. The training of the body consists in drill, whereby the routine affairs of life are reduced to mechanical habit. The training of the mind consists in the development or strengthening of the faculties. For this latter purpose the selection of subject matter is rela-

[1] *Curriculum Construction.* New York, Macmillan Company, 1923. p. 7.

tively unimportant; what counts is the exercise that the faculties undergo. It seems to me that the directions furnished by faculty psychology for the conduct of educational practice are as definite as one could reasonably desire.

It should be noted that faculty psychology takes its point of departure from the nature of man and of the learning process. This is perfectly sound procedure. (The trouble with faculty psychology was not its procedure, but its assumptions regarding the nature of man.) There is at present a widespread agreement that faculty psychology is wrong. That being the case, we must, of course, adopt a different line of approach. Since there are no faculties to be trained, we naturally look outward and not inward for our objectives. (The purpose of education is not the training of faculties, but training for the various activities that are necessary for social life.) The objectives of education, therefore, must be sought, so it is asserted in those abilities which enable us to perform the activities required of us by the nature of our social environment.

It is altogether natural that this movement, which loves to call itself "scientific," should have secured a large following. It holds out various inducements. In the first place, (it promises to deliver us, at one stroke, from the whole appalling mass of verbiage that has gathered around the topic of objectives.) To find oneself emancipated from the formulae of outworn traditions is in itself immensely invigorating. Secondly, (it promises to bring education into intimate and vital relations with life.) Under the old régime there was clearly something wrong, but it was not easy to locate the nature of the trouble. Like Omar Khayyam, many an aspiring teacher made it a practice to frequent doctor and saint in order to gain insight. In so doing he heard great argument "about it and about," but—again like Omar—he all too often came away with nothing tangible except the uninspiring discovery that he had been the victim of misplaced confidence. But in our scientific education our theories get down to earth and are made to do a day's work. And thirdly, (this movement promises to the specialist in education a chance to

regain his self-respect. Within the limits laid down here, so it would seem, he can be scientific along with the best of them. To those who have endured for many years the slings and arrows of an outrageous prejudice against teachers of education this cannot count as a small consideration.

In order to prevent possible misunderstanding, let me say at once that this movement, to my mind, contains much that is true and desirable. But as a definitely formulated movement it is still young and so subject to the one-sided enthusiasms of youth. The reaction against faculty psychology has been somewhat indiscriminate. It tends to overlook the great merit of faculty psychology, which is that it tries to take its clue from the nature of the learner and of the learning process. This is precisely what is being neglected nowadays, and this neglect is bound to work havoc with our doctrine of objectives.

As an illustration of the point I may refer to Dr. Bobbitt's recent pamphlet, *Curriculum Making in Los Angeles.* In this study the question is raised at the outset how we are to select the abilities that are to constitute our educational objectives. According to Dr. Bobbitt the ideal way of doing this would be "through a careful scientific analysis of community needs by trained investigators."[2] The discovery of these community needs would be, *ipso facto,* a discovery of desirable abilities. As he points out, however, this procedure is not practicable at present, because we have no such army of investigators available as would be needed for the purpose. But, fortunately, there are many instances in which such investigation is unnecessary. No scientific investigation is needed, for example, to prove that the ability to read is a needed ability. This ability and various others of a fundamental sort, "represent the common judgment of thoughtful men and women. Science is needed in some cases for making them quantitatively exact; but not often for proving their need."[3]

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[2] *Curriculum Making in Los Angeles.* Chicago, University of Chicago, 1922, p. 6 (Supplementary educational monographs, No. 20).

[3] *Ibid,* p. 7.

(Just how Dr. Bobbitt expects a scientific analysis to reveal desirable abilities and needs I am quite unable to discover.) No scientific analysis known to man can determine the desirability or the need of anything. Statistical investigation, for example, may show that a certain number of burglaries occur annually in a given community, but it does not show whether the community needs a larger police force or more burglars. That is altogether a question of what sort of community we may happen to want. Or, to take Dr. Bobbitt's own illustration, a scientific analysis would doubtless show that a reading ability is necessary for the conduct of many of the complicated operations in civilized society. But whether it is desirable that these operations should be carried on the deponent saith not. Old Governor Berkeley of Virginia—God rest his soul!—was of a negative opinion. (The notion that ideals can be evolved from a process of collecting environmental facts is just another of the many delusions to which our sinful human flesh is heir.) This same notion is held by Dr. David Snedden, in his book entitled, *The Sociological Determination of Objectives in Education.*

Perhaps the question is somewhat academic. Dr. Bobbitt himself does not, as a matter of fact, rely upon scientific analysis, but upon the "common judgment of thoughtful men and women" for the determination of desirable abilities as educational objectives. (He submits a list of 550 abilities, with the clear implication that the great mass of these, at any rate, represent such common judgment.) This is rather staggering. If the list really represents such common judgment, we are bound to conclude that men and women are more amenable to reason in Los Angeles than anywhere else on the globe. At the opposite end of the country, in the halls of Congress, there is certainly no similar agreement as to the needs of the community. In fact, as far as I can recall, the only suggestion emanating from that quarter that ever carried with it anything like unanimous approval was the sentiment that, "What this country needs is a good five-cent cigar." One almost wonders whether the teachers of Los Angeles did not mistake Dr. Bobbitt's list of abilities for a petition to be

signed. Since human beings are what they are, a report like that of Dr. Bobbitt must be received with considerable caution.

An inspection of the list of abilities soon discloses, as I venture to think, one reason, at least, for the surprising agreement. Speaking generally, the abilities are of two kinds. One kind consists of practical abilities such as people would ordinarily concede to be desirable, without much hesitation, as e.g., "the ability to check up laundry slips," "to build a camp fire," or "to sell one's automobile with profit to oneself." (The other kind suffers from vagueness of meaning or indefiniteness of application.) Dr. Bobbitt tells us, for example, that, according to the common judgment of thoughtful men and women, it is desirable to cultivate the disposition to obey the laws, to recognize obligation, to hold to high ideals and standards, and to do one's best, whatever the circumstances. But what does such agreement mean? Do these thoughtful people also agree with Emerson's dictum that "good men must not obey the laws too well?" Is the sense of obligation or duty to be cultivated for its own sake, or is it to be reduced to terms of interest? (Does everyone decide for himself what constitutes high ideals and doing one's best? These questions have a vital bearing on what shall be taught and how it shall be taught.) (As long as we ignore the differences of opinion that lie behind the sheltering verbiage, we are not determining objectives, but merely furnishing a sanction for every teacher to set up whatever objectives he may see fit.)

It would not be difficult, I think, to cite other evidence to the effect that Dr. Bobbitt's list of abilities not only covers up debatable points, but is essentially a reflection of his own personal philosophy of life. We find in the list such abilities as the ability to read one's rights as things earned; the ability to feel oneself a part of a larger unitary whole, which we call the universe; and the ability to see all reality *sub specie aeternitatis*. It would be open to a critic to argue that babies have rights which are not earned; that the root of religion lies, not in a sense of unity with reality, but in a sense of sin and division, or perhaps that this sense of oneness is but another name for mysticism and a

source of harm rather than good; and that the habit of seeing things *sub specie aeternitatis* is evidence of intellectual perversion. I do not wish to urge any such criticisms, nor to object to the cultivation of a philosophy of life. On the contrary, a philosophy of life is necessarily basic to any serious educational theory. My criticism is that personal bias or preference is smuggled in under the guise of an objective, impersonal determination of fact. When this happens, educational objectives become once more, as in the past, an excuse for the perpetuation of tradition and the *status quo*.

As a further point I wish to call attention to the fact that the selection of abilities carries with it certain unrecognized implications with regard to the nature of the learning process. As was intimated previously, Dr. Bobbitt's scheme substitutes abilities for the old-time faculties. In the older doctrine abilities were of two kinds. Those which pertained to the body were highly specific, consisting of mechanical habits. On the other hand, those which pertained to the mind were general, as e.g., the ability to reason; and the application of this ability to a variety of situations was supposed to be guaranteed by the principle of transfer. In the selection of activities or abilities the question inevitably arises as to the extent to which it is possible to train general abilities.

This question is not faced in Dr. Bobbitt's scheme, but is avoided. (In some connections his list of abilities indicates a profound distrust of transfer.) For example, instead of providing for a general ability to handle tools, he lists as separate abilities such skills as putting up shelving, putting on doorknobs, renewing washers in faucets, gluing, soldering, joining electric wires, insulating wires, keeping the clocks wound, and so on in endless detail. (But at other times the abilities rival the "faculties" in generality.) We find listed, for example, the "ability to protect one's self from social, economic, and political fallacies," a "general dislike of things cheap, careless, and tawdry," and the disposition "to do one's best whatever the circumstances." In other words it seems entirely arbitrary, in the case of any new activity,

whether it is to be assigned to a new ability or tucked away under an old one. (But it certainly makes a difference in the training of these abilities.) Make an ability specific enough and it becomes automatically converted into a habit. Make the abilities general and the emphasis is bound to shift to some other spot. If, for example, we should undertake to train a boy's ability to button up his coat, we should rely chiefly on drill. But if we should aim to develop the ability to dress neatly or in accordance with the fashions, we should proceed very differently. (According to one kind of psychology, habit is the fundamental category in education. Other psychologies disagree with this and with one another. Where does Dr. Bobbitt stand?)

My point is that we cannot have it both ways. If every specific activity means a correspondingly specific ability, then the list, long as it is, is but a haphazard, random sampling. Why not an ability to thread a needle, to sew on buttons, to climb a fence, and to be amiable towards one's mother-in-law? Why not, in short, reduce life as far as possible to the level of mechanical habit? On the other hand, if there is such a thing as the training of general ability what is the meaning of all the detail? Unless we take the nature of the learner as our point of departure in the determination of objectives, we get nowhere at all. (The list of abilities, it appears, offers us something that is neither fish nor fowl.)

In the scheme of Dr. Snedden, to whom reference was made previously, we find a still different procedure. Dr. Snedden takes his cue, not from a notion of "abilities," but from the contrast between "producer" and "consumer." (This contrast, it appears, is all we need to consider when we come to deal with the curriculum and with methods of teaching.) The curriculum should contain certain "hardwork" subjects, as determined by practical needs, and it should contain "high-grade play" subjects, for the employment of our leisure hours. Like the enthusiast who thought the adoption of the single-tax system would bring about a great decrease in profanity, Dr. Snedden expects sociology to work miracles. He believes that the study of sociology will solve

all the major problems of education. This belief rests on two assumptions: (1) That ideals will emerge automatically from an inspection of sociological facts; (2) That the abstractions of "producer" and "consumer" tells us all we need to know about the workings of the mind. These assumptions are not argued; they are treated as self-evident. (The fact that ideals are not derived that way, or that the "producer-consumer" distinction does not have the slightest bearing on the nature of the learning process[4] does not seem to disturb Dr. Snedden in the least.) The whole question is begged from the start, and we are asked to believe that such procedure is scientific.

(If the foregoing contentions can be substantiated, it is necessary to adopt some different mode of approach.) This is the conclusion reached by Dr. Charters, who has urged recently that activities must be distinguished from ideals and that the analysis of activities cannot be expected to furnish educational objectives. The method of job analysis, about which we have heard so much of late, merely gives us the component elements of an activity, in abstraction from the learner. It does not decide anything about the spirit or attitude or purpose by which the activity is to be controlled. (This is a question of ideals, and the selection of ideals is a matter that is not governed by any scientific necessity.) Accordingly, he favors the method of selecting ideals through conference and discussion by appropriate persons. The suggestion is advanced by him that, in the case of city school systems, it might be left to "the faculties of the schools, the school boards, and public-spirited citizens generally, to decide upon the ideals, which shall dominate the instruction of the youth in the schools."[5]

(The view held by Dr. Charters is undoubtedly an advance.) The recognition that ideals do not result automatically from a process of fact-finding is a great gain. But it is doubtful whether this advance takes us far enough. In passing it might be mentioned that there would be grave danger in inviting school boards and public-spirited citizens to formulate the ideals to be taught.

[4] Hullfish, H. G. "Looking Backward with Snedden," *Educational Review*, 17:61-69. February, 1924.

[5] Charters, *Op. cit.* p. 55.

From such practice it would be only a step to legislative action, such as we have witnessed at various times during the past few years. A more serious question, however, is whether the encouragement of such practice would not be the professional equivalent of committing suicide. Are we ready, for example, to let such a question as that of duty versus interest be settled by a vote of laymen, however public-spirited? Questions of that sort constitute a professional and inescapable responsibility. To reserve the *interpretation* of such matters as duty, patriotism, etc. to ourselves would, of course, nullify the whole business.

I do not mean that the public is not entitled to a voice as to what shall be taught in the schools. The point is that in such matters as are illustrated by the question of interest and duty the public is necessarily uninformed and is entitled to such guidance or leadership as its professional educators can give. Such questions cannot be dealt with intelligently through a consideration of activities in the abstract, but only in the light of the nature of the learner. If we merely take over a set of ideals, imposed from without, we are again on the road to formalism and routine. It is possible to make ideals as formal and wooden as anything else. Training in obedience or truth-telling, for example, can become thoroughly unintelligent and even hostile to the spirit of virtue. The point is illustrated by the small boy who was leaving the room preceded by his sister. Just as the girl was in the act of turning the doorknob she got a terrific thump in the back from her indignant brother, who exclaimed: "You little wretch, don't you know that a gentleman always opens the door for a lady?"

The intimate bearing of the nature of the learner, both on the method and on the content of what is taught, remains to be considered. Suppose, for example, that we set out to teach the spelling of a certain set of words which, according to reliable investigation, a youngster of a certain given status should know. We are at once confronted with the question of method and presently also with questions regarding the selection of subject matter. If we are dominated by a psychology in which habit is

the end-all of everything, we shall doubtless rely for results on persistent drill; and, as to content, we shall be satisfied with the list of words that the investigation has provided. But if we should wish to make concrete application of Dewey's doctrine of growth, we should try to touch off the springs of vital interest. We should then try to make the subject meaningful in terms of the pupil's actual living, and to realize this purpose we should be obliged to adopt a different method and, in all probability, to introduce other words in addition to those on the list. We might perhaps take account of the fact that pupils of a certain age are much interested in proper names, that they can be made to react to words appearing on street signs, that their attention may be held by oddities of spelling, that simple etymologies and family relationships among words may perhaps be usefully employed. In short, many are the things that may serve as grist for the teacher's mill. The case is similar, of course, in other subjects. When teaching is conducted on this level, it is by no means clear that the material obtained as the result of activity analysis is sufficient for the purposes of the curriculum. This material is a fitting nucleus, no doubt, but much remains to be filled in. Some of this extra material can be supplied by the writers of textbooks, but much will inevitably be injected by any teacher who is not dead on his feet.

In conclusion I wish to repeat that we can profit by the example of faculty psychology, which took its point of departure from a clearcut, albeit mistaken, notion of the nature of the learner. Unless the learner can retain his rightful place in the scheme of things, all this scientific education is bound to become simply an elaborate nuisance. We cannot permanently avoid our obligations in the matter by labelling serious consideration of the learner as "metaphysics" or "speculation." Philosophy, as James once said, is merely an "unusually obstinate attempt to think clearly," and the attempt must be made, even if it leads into such questions as the nature of mind, the nature of moral values, and other questions which collectively constitute philosophy of education. What, for example, is mind? The problem

is clearly fundamental, but, as a rule, our teachers have not even been introduced to it, to say nothing of having been helped to a solution. It seems odd to have to argue, at this late date, that the pupil forms an important part of the educative process. I am reminded of the country girl who was on her first visit to the city and who decided to have her picture taken. When asked by the photographer whether she would like to have a bust picture, she answered timidly that, if he could arrange it, she would very much like to have the head on too.

It is unnecessary, I trust, to add that no right-minded person can object to the scientific study of education. Such study is indispensable. But we cannot afford to forget that the significant objectives of education must spring from a comprehensive theory of education. (If our ideals are neglected or permitted to deteriorate, it is small compensation that we have made incidental improvements here and there.) We are in danger of losing ourselves in the mass of details and of losing our powers of imagination. (As Lincoln once remarked, when his time was eaten up by office-seekers, he was like a man who was renting out the front rooms of his house while the back of it was on fire.) We must cultivate a philosophy of education, if education is to have objectives that will enable it to meet worthily its obligations and its opportunities.

DISCOVERING AND FORMULATING THE OBJECTIVES OF TEACHER-TRAINING INSTITUTIONS

FRANKLIN BOBBITT
The University of Chicago

The teacher-training institution is a vocational school, for it trains teachers to perform functions, which are vocational functions. When we know what these functions are, we have the objectives of a teacher-training school. This institution ought not to have any aims other than vocational, for it should be able to assume that a foundation of general education has been laid before the candidate begins specialized training.

The method generally agreed upon for discovering the objectives of any vocational school is well known. The first step is activity analysis or job analysis. For example, to discover the objectives in training plumbers we visit all the sorts of places where plumbers work and list all the kinds of jobs which they perform. We discover, let us say, one hundred sixty-five different kinds of jobs. Whoever can perform all these operations with the proper skill, judgment, and resourcefulness is a trained plumber. We can, therefore, set up the abilities to perform these 165 jobs as the *fundamental objectives* of plumber-training.

Each of the plumber's abilities, of course, is a complex. Each involves habits, skill, ability to read blue-prints, knowledge of sanitary requirements and the science and mathematics involved, and other so-called "related" matters. This latter term is not quite accurate. These related elements function as parts of the process of doing the 165 jobs, and of these parts, we must never lose sight of a number of subtle, imponderable, but indispensable factors, such as a sense of responsibility, a disposition to adhere to high standards of workmanship, a vision of one's individual situation within the total workfield, perception of one's rights and duties, and the like. These, no less than skills, function

within each type of job. For *any* vocation, we are told, the same plan is to be employed.

To discover the objectives of teacher training, therefore, the investigator will go where teachers are performing all their tasks as they ought to be performed. He will then list the two hundred or five hundred or five thousand tasks which the competent teacher accomplishes in his work. The *abilities* to perform these tasks, then, are the fundamental teacher-training objectives—the abilities to do the jobs are the objectives. There are no others.

The technical thinking that guides the teacher in his work is a part of the labor of performing the tasks. The skills, habits, attitudes, powers of judgment, powers of initiative, resourcefulness, sense of responsibility, social-service conscience, and all the other matters are but elements of the abilities to do the jobs. What Dr. Charters calls the ideals, it seems to me, we had best look upon simply as factors involved in the abilities to do the jobs.

Now all this doctrine of activity analysis is too obvious and too well understood to require discussion. It has long been permeating all our thought. Yet of the thousand teacher-training institutions and departments in our country, not one, to my knowledge, has yet employed this method in any exact, complete, and thoroughgoing manner. The method has been employed systematically in discovering the objectives for training machinists, printers, electricians, carpenters, department-store clerks, and workers in scores of other occupations, but for discovering the objectives of training teachers, principals, and superintendents it has not been used—except in a general, casual, and very inexact and incomplete way. When we have so clear a theory—one which our profession has itself discovered—which we approve, and which we ourselves are applying to other fields, why do we not apply it to our own?

The reason lies upon the surface. It is simply that we do not know where to go to make our analyses. Teachers are doing all sorts of things in all sorts of ways, and judging their degree of success by all sorts of standards. We do not know which teachers are doing just the right things in the right ways.

With a very few exceptions—and they are surprisingly few—we do not know what the proper educational procedures are. Since we do not know the right processes, we have no means of locating the teachers who are using the right processes; and we cannot make exact activity analyses until we can locate the teachers who are doing the right things. Job analysis in our field, therefore, is at present a hope, rather than an immediate possibility.

Our immediate task is not to make the analyses, but to locate the teachers whose labors are to be analyzed. To do this, we must first discover what the true processes of genuine education are. Using these as criteria, we can know in advance what good teachers will be doing, and then we can locate them. But when we know in advance what they are doing, we do not need to locate them. The analyses are already made.

This is said on the assumption that education is now being carried on as it should be in some school system, so that our task is to locate that system. It is possible that that system does not yet exist; it is even probable.

Education is passing through a transitional period. We hear a great deal nowadays about the "reorganization of education." It is an actual fact. It is under way, and it is probable that there is imminent a genuine reorganization that will be vastly more far-reaching than most of our profession—even its leaders—yet suspect. It is probable that education is soon to be not the simple process of storing up inert bodies of embalmed subject matter—16 units in high school and 24 semester-units in college—but an honest, straightforward, common-sense development of those desirable abilities and personal qualities which function hour by hour and day by day in the lives of every-day men and women. If any such fundamental reformulation of education is imminent, then when we set about our work of analysis we should analyze not the activities of the teachers of the past which linger into the present, but rather those of the teachers of the future, which have not yet been widely enough adopted. In our analyses, then, we must foresee the education of the future before it is put into effect by the teachers; we are to analyze the things foreseen, rather than those which now exist.

Whichever viewpoint we take, our professional task is not the simple job analysis that we apply to plumbers and machinists and department-store workers. It is the subtle type of analysis involved in educational research. Our task is to analyze the educative process as it ought to be; not to find out what teachers are doing, but rather to prove on the basis of carefully assembled evidence, what they ought to be doing. It will not be until after many years of research, experiment, and practical trying-out that there can be any certainty as to the details of a comprehensive system of general education. We cannot yet with certainty forecast the reorganized education, but from the farthest outposts of present-day research, thought, and effort, the dim outlines seem to be appearing.

Let us point out what appear to be six major fields of teacher-activity—possibly, *the* six major fields. If we could know the specific teacher-activities that make up these six fields, then we should have our specific objectives. While we cannot yet know these things, we can at least delimit these fields as the first step in finding out.

The first of the six types of teachers' jobs is to ascertain the character of the native powers of every child that is entrusted to his care—each one considered as an individual. The task is to estimate and measure the possibilities for each child's growth and to use the evidence of his present powers as a means of forecasting his probable future powers.

The teacher's job is to see the individual child as a transparent tissue of potentialities; to see what the child can make of himself and what it would be futile for him to attempt. The teacher's vision of the amount of personal expansion toward which the child could profitably aim should be shared with the parents and the child. This is physical and psychological prognosis. In every case it must be a matter of child, parents, and teacher. It can no more be a matter of school classes than hospital treatment of a patient can be a matter of group treatment.

The second job of the teacher is to forecast the future place of the child in the adult world; to foresee those activities which

he can profitably engage in and from which society will profit; and to forecast the specific abilities and personal and social qualities which should function in the performance of these desirable activities. This second general task is the *determination of specific objectives.*

For this task the teacher must be thoroughly familiar with the adult world of human society. Education is preparing growing men and women for the adult world, and it is absurd to think that one can prepare them for it without knowing what it is. Education is to develop powers that function; but first one must know intimately and exactly what powers do function, and in what ways, and under what conditions. Educational prognosis must look forward not only to physical and psychological maturity, but to the specific personal, social, vocational, and recreational activities and abilities which constitute that maturity. This calls for continuous study and analysis of the adult world by the teacher. This, however, cannot be by mere hearsay coming to cloistered teachers; they must be as intimately in contact with the adult world as with the child world. In their work they should think of themselves primarily as active members, not as associate members, of the current adult world, and as giving specialized assistance to the world in its dealings with its children. For, after all, education must be primarily a matter of parents and children, of the general adult world and its child-world, with teachers only specialized helpers.

Now the children with their differing original natures come from homes which are unique. Each child lives in an environment different from every other: different parents and relatives, a different home atmosphere, a different kind of house and furnishings and general surroundings, different opportunities for play and work. Socially every child is an individual, just as much as he is psychologically an individual. He will always be functioning as an individual, while he is becoming an adult—each in the niche which he has, with the help of others, found for himself. And when he reaches maturity he will still find himself functioning as an individual in the niche that he has

been able to hew out. Thus in setting up the objectives of his growth from a social point of view, there can be no thought of impersonal objectives, all equally applicable to impersonal units in a school class.

The teacher, then, is to see the social possibilities of each individual child; to see what he probably should try to make of himself in the social, economic, political, family, religious, recreational, and vocational environment; to encourage him and stimulate him to develop as far as possible along every desirable line; and to restrain him from attempting anything that seems to the teacher's practiced eye to be clearly beyond the bounds of possibility for him. The teacher is to be high-minded and yet to deal with truth, not with illusions or delusions. The teacher is to be vision to parent and child in their seeing of these things. He is to assist them in their locating the specific educational objectives which the child, with the help of parents and teachers, should strive to attain.

In view of the present disastrous over-specialization of education, we know how absurd it may seem to expect parental interest or understanding or willingness to discharge any considerable responsibility. We assume that in our training of parents for their responsibilities our failure has been absolute; that as parents we have left them wholly incompetent and shorn of all interest and sense of responsibility. It seems to be true that we have thus failed to train parents for their adult responsibilities. But in our revised program, as we turn away from education of the subject-storage type and undertake developmental education, one of our first tasks must be to look at the realities and to see the parent-child relationship as a major factor in the conduct of the educative process.

The third job of the teacher has to do with determining the *pupil's activities and experiences.* His task is to ascertain each child's powers and the possibilities of these powers, which through normal functioning can be made to develop into the desired mature forms.

This means that the teacher must have a continuous view of the pupil's life in his actual environment, at home, at school, and elsewhere, so that he may see where all the needed normal functioning ought to take place, and that he may assist in keeping clearly in the mind of pupil and parent the functionings from which the pupil can profit most, with the best times, places, methods, and amounts of these functionings. Again the teacher must be able to advise the pupil and his parents regarding the functionings from which proper growth can arise. Here also the teacher must deal with the pupil as an individual, one who functions in his way because of his nature and because of the social situations that constitute his capacities to function. It is not a question of the mass or unison functioning of impersonal units.

The fourth field of teacher labor has to do with the provision of the necessary material facilities. The teacher's job here is first to study the material conditions which afford opportunities for and set limitations to, the functioning of the pupil's expanding abilities, and to assist in planning and providing those material conditions which are best for normal growth-producing functioning. By material conditions we mean books, maps, tools, home playgrounds, school playgrounds, home gardens, school gardens, home kitchens, school kitchens, workshops, motion pictures, and whatever else in the pupil's material environment assists him to a normal functioning of his powers.

These material opportunities will be for the most part provided by the parents and pupils themselves; to a considerable degree by the school; and to some extent by still other social agencies. The whole material background of community life, as far as the pupil is in contact with it, is involved.

A large part of the teacher's task is to provide vision for parents and pupil as to this material basis for the pupil's functioning, and to assist pupil and parents in choosing, using, and controlling it. The teacher is, also, to some extent, concerned with supplying the actual schoolroom material, such as books, apparatus, supplies, and the like. Whether the teacher is con-

cerned with planning or provision, he has to deal with the living conditions of individual pupils, the actual concrete things that mean *life* to them. The home-garden opportunity is different for every child; so are his tools and books and victrola records, the books he draws from the library, the scientific apparatus that he makes, the school supplies that he uses for his own purposes, and in fact most of the things involved in what he regards as normal living. The material basis of education cannot be standardized for impersonal units.

The fifth field of the teacher's work relates to the provision for the pupil of a proper growth-producing human environment. The teacher's task is to study the personal and social conditions and influences which are, or can be, operative in stimulating the pupil to a normal growth-producing exercise of his powers, or which afford opportunities or set limitations; and to assist parents and pupil in planning and supplying the conditions and influences of this kind from which he may most greatly profit. This personal and social environment provides, more than material conditions, the atmosphere, guidance, example, stimulation, inspiration, and opportunity for civilized growth-producing functioning of the individual's powers. The teacher must, therefore, be a master of the influences in the human environment which are to be used and controlled in conditioning the functioning of the pupil's powers.

The personal and social influences are provided by parents and relatives, friends among children, adult friends, the family physician, the minister, teachers; the individual meets them in school, church, amusement places, parks, museums, and workplaces. The teacher is the only one of these, however, whose primary and specialized interest is education. His task is double. On the one hand, he will give parents and pupils an understanding of the personal and social opportunities to profit by or those to be avoided; on the other, he will take the lead in the school, and to some extent outside the school, in supplying healthy, stimulating, and invigorating influences to the pupils, and he will direct the whole school life to this end.

As a recipient of social influences, each pupil is an individual. The social environment is different for every child. As each one lives his life and thereby grows in power to function, each is responding to influences emanating from different sources. It is these varying influences which are to be discovered and utilized in his education. Here again, therefore, each pupil needs to be treated as an individual, and not as an impersonal unit in a class.

There is a sixth major job before the teacher. This is to observe continuously the development of the child's power to function in the expected degrees along the different desired and expected lines. The objectives are the expectations. These are the standards in terms of which his growth is to be measured, and they are individual. It can never be possible to group children into classes with identical standards. If it should be done with a group of children on the basis of one ability or characteristic, they would be found endlessly heterogeneous on most of the two hundred or five hundred other abilities. There can be no possibility of uniform class-standards of achievement. Each child is to grow into the power to function according to his original nature and his social situation. Two individuals on the same level of natural ability will aim at and be measured by different standards because each has his own social situation and goal; while two individuals with different degrees of native ability will sometimes aim at the same standards because of compensating differences in social situation, stimulation, opportunity, or ambition.

The teacher has the infinitely delicate task of judging the growth of subtle specific powers. He must know the pupil as an individual, a human being, as intimately as a physician knows his patient, and far more comprehensively. Many things can be measured mechanically by means of objective devices and the status of the pupil's abilities recorded. Most of the fundamental ability-factors, however, cannot yet be so measured. The teacher must have enough personal association with the child to know his quality. This requirement calls for a minimum amount of dividing education into departments; it calls for the general

practitioner in education who knows all its aspects, and who can know the individual child thoroughly. It calls for humanness in the cultivation of human beings. In view of our present ponderous mechanisms for dealing with delicate human susceptibilities, and of the dehumanizing tendency of our already disastrous over-specialization, this cannot be too much emphasized.

We have now enumerated what we would call the six major fields of the teacher's work and have indicated the general classes of functions. If we can now break these up, each into its specific tasks, we shall have the activity objectives of teacher-training. When we know specifically what teachers should do along these six lines, then we shall be able to know what the leaders and directors of teachers should do. It seems, therefore, that the objectives of training principals and superintendents must wait on the discovery and formulation of the functions to be performed by the teachers in the reorganized education.

VALIDATION OF OBJECTIVES

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My excuse for offering this paper is the belief that the isolation and definition of a problem constitute a contribution to progress of no less value than the discovery of a solution. Frequently in man's history much time and energy have been wasted "barking up the wrong tree," and very many complex and baffling problems have ultimately turned out to be comparatively simple and easy of solution when approached from the right angle. Accordingly, in spite of many misgivings I have decided to air a growing conviction of mine that somewhere in this matter of curriculum building a fundamental mistake has been made. I shall not be able to point out that mistake but only to suggest the general area of its location and the general method by which ultimately it may be isolated and defined. This paper is really an appeal for assistance. What I hope to do is to direct your attention to certain aspects of the general problem of curriculum making which seem to me worthy of more detailed scrutiny than they have yet received.

During the last few years the educational world has given an unusual amount of attention to the problem of curriculum building and many new books on the subject have appeared. This is but natural, for as our social prophets tell us, we are living in a transition age during which even the most fundamental of our ideals may be expected to undergo *some* modification. But any change in our general conception of the aims of education leads inevitably to the construction of a new curriculum designed to realize these aims. It is precisely to this process of formulating aims and of designing curricula to correspond to them that I wish to direct your attention.

Fortunately the process as ordinarily carried on is familiar to you all. As one speaker put it the other evening, curriculum building is the favorite educational indoor sport. Let me recall

to your mind the various steps of the conventional procedure. First, a series of experiences causes us to feel dissatisfaction with the existing order. Second, after an analysis, more or less conscious and searching, we seize upon what seems to us to be the element in the situation most in need of change, and we make the attainment of that supposedly crucial element our objective. With this goal kept clearly in view, we take the third step. We select such subject matter, and present it by such method, as seems to us most likely to lead to the desired result. These three steps, (1) dissatisfaction, (2) analysis leading to emphasis upon a new objective, and (3) organization of materials likely to produce the result desired, give in outline the essentials of the process.

Perhaps I ought to say in passing that I am not going to waste your time by even considering the scissor-pastepot, prevailing-style-as-shown-by-frequency-of-occurrence method of curriculum building, but I do need to acknowledge that sometimes we elaborate the process at several points. For instance since the advent of measurement we tend to define the goal objectively and to compare by standard tests the product of our teaching effort with the objective set up. Also, we have learned that it pays to base our selection of method upon measures of the relative efficiency of various alternative methods. But never do we adequately validate the objectives themselves. Yet unless by chance we hit upon the right objectives all the rest of our labor is in vain.

That we have a specific situation before us, let us consider the illustration used by Charters in his *Curriculum Construction*, in my judgment an outstanding contribution to the literature of this field. Charters points out that Plato in his desire to improve the government of his fatherland developed the concept of the philosopher-king. Plato's analysis lead him to believe that his ideal rulers would need to be philosophical, high spirited, swift-footed, and strong. To achieve these goals he prescribes gymnastics for their bodies and music for their minds;—and presto, the job of curriculum building is finished.

Plato gives his reasons why he thinks music and gymnastics will produce the effect he desired but they are opinions only.

Today, as I have already indicated, we are able to take—and many do take—an additional step and by measurement scientifically determine whether the means chosen to achieve the objective really do so function. But our scientific thinking has not yet encompassed the whole process. My thesis is that we need to validate our choices of objectives even more than we need to validate the means of achieving our objective. The farmer who desires a good potato crop and out of his years of experience selects the relation of the time of planting to the phase of the moon as the critical factor, is following precisely Plato's method. Because thirteen men once sat down to supper around a table in an upper room and two of them met violent deaths in the days immediately following, there are many who have set up the objective of avoiding a connection with anything that resembles thirteen as major goal of their life activities. When we ourselves do not believe in an objective selected wholly on the basis of opinion we call it a superstition, but when *we* do the selecting, we give "common sense" as sufficient justification for our choice. But, wouldn't you think anyone's common sense would tell him that the superstition method is not the wise one to follow in the selection of objectives?

Stop a minute here and ask yourselves a few pertinent questions. Would not Plato have justified his choice of music and gymnastics on the basis of common sense? How do *you* justify the method and materials used in the elementary schools of your city for teaching spelling? A valid method is one which under standard conditions never fails to produce the desired results. An unsupported body always falls; the passage of an electric current along a wire always produces a magnetic field around the wire; in the biological world, like always begets like. The universal law of nature is that under given conditions identical causes produce identical effects. To one who admits the assumption that this is a world of law and order, there is no escape from the conclusion that the selection of valid objectives and valid means of achieving such objectives will give man such complete control over the educational process that he can predict the outcome with

certainty. Conversely, it is safe to prophesy that as long as opinion and superstition rule in the choice of objectives, this educational process will be inefficient. My contention is that at present but very few of the immediate objectives of teaching have even been validated, and that but very few educators are even aware that the objectives are in need of validation.

Fortunately, there is no need to continue this discussion longer on the common-sense basis. Evidence is at hand and I feel that the point I am trying to make may, in fact at least, be established by scientific data.

Let us consider, the teaching of reading. Common sense tells us that a child cannot be expected to read until he knows his letters. Job analysis is a recent addition to the jargon of the educational conjuror but common sense beat the modern psychologist to job analysis by many centuries. A job analysis of reading shows the need for a knowledge of the letters and their sounds, a knowledge of all possible combinations of letters into syllables and of syllables into words and of words into sentences. The aims of those early teachers of reading were clearly and objectively defined. The efficiency of their production was high. But a child who survived the process eventually learned to read, not because of the teacher's efforts, but in spite of them. The same statement may be made of much of the educational work of the present day. Why is it that large classes do better than small ones? May it not be because in larger classes the teacher with her non-valid objectives, has less chance to interfere with the real learning process?

One thing is certain. In the field of reading, we have changed our objectives. Today the most effective teachers teach a child to read *whole sentences* first; later to analyze them into words, and finally into letters and sounds. Some of us, however, are not yet satisfied. We have some evidence that tends to show that to teach a child to read is not the most valid objective in the field of reading. Some of us are carrying on experiments to see whether or not the objective of teaching the child to teach himself to read is not a better one. However, whether we are right or

wrong is not the question today. If in the past we have made mistakes in the selection of our objectives in teaching reading, how do we know that our present choices are not also in error? Are we giving adequate attention to the problem of validation of objectives?

Before carrying this discussion further, it seems to me important that we should have a common understanding of the two words I am using so frequently: validation and objectives. Validation is a "high-brow" word for proof that a thing is what it pretends to be. When the maker of a test for spelling finds that the scores of children in his test have a correlation of but 0.35 with the abilities of the children in spelling as otherwise determined, and 0.75 with their abilities in arithmetic, he understands that his test is a more valid measure of ability in arithmetic than of ability in spelling. If he is wise, he changes the label of his test accordingly, in spite of the fact that common sense says that the activity carried on in the test is spelling.

This is the procedure which resulted in the physician's thermometer. Change in the length of a column of mercury in a thermometer is a valid measure of change of temperature, because the two changes correlate perfectly. Measurement of change in length is, therefore, a valid measure of change in temperature because it leads to correct knowledge of temperature condition. It requires the technique of that glorified common sense we call scientific inductive verification to establish validity.

When cause and effect are closely related, common-sense validation is all that is needed. It requires no elaborate procedure to determine that in order to remain dry it is wise to get under shelter when it rains. Moreover, he who takes to shelter can tell readily whether or not getting under shelter was effective. But when the situation is complex and the relation between causes and effect is obscured by the presence of many causes and many effects, validation is a much more difficult matter. Try to picture to yourselves the difficulty the first Indian farmer must have had in persuading his fellow men not to eat all their corn but to save a part to put into the ground. Can you not hear one of them saying, "Wouldn't I be a fool to go hungry and put good

corn in the ground? Common sense ought to tell you that corn will rot in the ground. Can't you find plenty of spoiled corn all around everywhere without throwing away good food? No, Sir! No fool ideas for me. A kernel in the stomach is worth two in the ground every time." Yet planting seed in the ground is a perfectly valid objective for one who wishes to be secure in his control of his food supply. Indeed we don't have to go back to primitive farmers for illustrations. Any agricultural college will tell you of the difficulty of getting present-day farmers to validate their objectives and to change their objectives according to the results of their validations.

Many of you, I am sure, will value more highly a different type of illustration. One is at hand. Frank Gilbraith, the noted efficiency engineer, was at one time concerned with the production of skilled bricklayers. He hired the most expert bricklayers he could find to teach his beginners but the teaching took a long time and proved very inefficient. Finally Gilbraith resorted to motion-picture analysis and compared the motions of the skilled bricklayer on the job actually laying bricks productively, with the motions of the same man teaching a beginner. Much to his surprise he found that there was very little relation between the two sets of motions. The expert bricklayer did not know what the elements were which made him expert. He selected elements on a common-sense, opinion basis, and taught the beginners motions which actually prevented them from becoming expert. The better the teaching and the more efficiently the pupils learned, the less chance there was of their ever becoming experts.

Gilbraith accordingly changed the objective. In place of the objective "following the directions of an expert bricklayer as a teacher," he put before the beginners the objective of "imitating the motions of an expert bricklayer working on the job." Gilbraith didn't take any chances about what was to be imitated. He took motion pictures of many expert bricklayers, and selected as his model the best of these motions which proved to be essential to them all. By cutting this motion out of one film, that from another, he was able to piece together an ideal bricklayer,

as it were, and to direct the attention of his beginners to precisely the *best* motions to fit each situation. With these new objectives, beginners became experts in record time. Gilbraith has since used the same method to produce on demand a world-champion typist. During the war and since, the American Council on Education under the leadership of Dr. C. R. Mann has been engaged in a very similar process for the development of efficient methods of training industrial and army workers. The critical factor in these successful efforts is the attention paid to the problem of validation of objectives.

The term "objective" needs discussion also. You have probably noticed already the apparent confusion in my discussion between objective and means of training. Perhaps you have said to yourself, Gilbraith didn't change his objective, but his means of attaining it—his objective at all times was to secure expert bricklayers. What he changed was the means by which his objective was achieved. Yet I have called that a change in objectives. It is the confusion at this point which is the chief reason why validation of objectives has not received more attention than it has.

There are evidently various types or classes of objectives. Some of these are ultimate, others are immediate, and still others are intermediate. Ultimate objectives are rooted in desire and need no validation. Indeed no validation is possible. If I wish to wear a bright pink tie, I wish to wear it, and that is all there is to it. If I decide to purchase such a tie, my immediate objective in entering a store, is to purchase, not to wear. But if I find in store after store, that they have no pink ties because none are ever manufactured, then my objective of purchasing a pink tie turns out to be invalid. I can't get a pink tie that way. If I still desire to wear a pink tie, I enter the store with a changed immediate objective. This time I try to purchase a piece of pink silk. If my objective is valid, I get the silk. Then I am able to make a pink tie, and ultimately to achieve the satisfaction of wearing the tie I desired.

In teaching we have ultimate objectives, and immediate objectives. Part of our difficulties arise from the fact that specializa-

tion tends to make us lose sight of our ultimate objectives and substitute therefor intermediate and immediate objectives. Thus the ultimate goal of education in all ages has been successful living, however differently successful living may have been defined. Success in living is judged by someone in authority to be dependent, let us say, upon ability to spell. Ability to spell thus becomes an intermediate aim. The immediate aim of the teacher of spelling, however, is to develop in children the ability to spell, under the spelling conditions she imposes, the words she selects to be spelled. It is common experience, however,—and the experience is one which can be supported by scientific evidence—that sometimes the child who attains the immediate objective set up by the teacher, so that he receives a high mark and is promoted to the next class, may fail miserably in the spelling situations of life. Such a failure proves that the teacher's immediate objective is not valid. Evidently the ability developed by the teacher is not identical with the one needed in life.

Suppose now, that the teacher is convinced by the evidence, and that she decides to emphasize, not ability to spell, but the attitude of the child toward misspelling in all his written work. Her teaching procedure then consists of actions designed to arouse in him the desire never to have a word misspelled. The teacher now does not assign the words to be learned; the child does that. The teacher now does not assume any responsibility for the child's ability to spell. The child assumes that. The teacher says "whereas before my objective was the development of ability to spell, now my objective is the development of the purpose to spell." She considers that she has changed her objective from results to process. From another point of view, however, she has changed not her objective, but her means of achieving her objective. She still desires the child to behave efficiently in spelling situation in life in order that he may live successfully.

There is need therefore for the qualifying adjectives, ultimate, intermediate, and immediate; and I suggest that a valid title for my paper is "the validation of the immediate objectives

of teaching effort." In our previous illustration, the physician's ultimate objective is successful living by his patient. His intermediate objective is to determine temperature. His immediate objective when he inserts the thermometer in his patient's mouth is to find out how long the column of mercury in the thermometer will become. But this is a valid immediate objective because it enables the physician to determine temperature and knowledge of temperature is a valid intermediate objective because it contributes to the assistance which the doctor desires to render his patient.

Perhaps I should point out explicitly that, so far, our scientific endeavors have been limited mainly, to evaluating materials in terms of ultimate objectives, to evaluating methods in terms of immediate objectives. Thus Ayres and others, who by analysis have determined the words actually spelled by men, and the situations in which they are spelled, have rendered great service in providing the conventional teacher with materials on which to expend her teaching efforts. When Pearson measured the relative efficiency of teaching homonyms together and separately he contributed to the selection by the conventional teacher of the most efficient method of achieving her immediate aim. But if I were able to present evidence, as I believe I shall some day be able to do, that the direct teaching of spelling is not a valid immediate objective for a teacher, I could persuade many teachers to adopt an entirely different procedure. Moreover—and I hope you will notice the force of this—it is possible that under the new objectives, the studies of Ayres and Pearson would lose their significance and value. They themselves are valid only for the conception of spelling ability under which they were obtained. If ability to spell should turn out to be something entirely different in character from what we have supposed, our entire scheme of thinking would have to be changed to correspond. Such a change took place in chemistry when the concept of elements was submitted to the test of validation. The phlogiston philosophers had not validated their immediate objectives. Most of the modern educational philosophers are in a similar situation.

Charters gives the latest word in the modern program of curriculum building. His seven essential steps are:[1]

(1) Determination of ideals and related activities which constitute the, as he says, major, but in terms of our discussion, the ultimate objectives.
(2) Analyze these into working units.
(3) Arrange them in order of importance.
(4) Raise to rank of high position in this list objectives which are of great value for children, even though low in value for adults.
(5) Determine the relative importance of each in terms of what it is practical to accomplish under existing school conditions.
(6) Collect the best practices of the race in teaching these objectives.
(7) Arrange the material in the proper instructional order, having due regard for the nature of the child and of the subject matter.

In this list I find no hint of the need of validation.

By way of illustration Charters gives an analysis of the job of an application clerk in a department store. Nine duties are listed and as many personal qualifications which are, as Charters himself says, "thought to be necessary" in carrying out these duties effectively.

That each of these may be proved valid as a duty or a personal qualification of an application clerk may be conceded. Nevertheless a question still remains. These duties and qualifications are not valid as a whole, nor is any one of them valid as an immediate objective of teaching effort, unless their combined effect is to produce efficient application clerks. There is always the possibility that our analysis may be faulty, that all our evidence may be beside the point. In many situations in life, perhaps I should say in all situations in life, there is a critical factor and the whole does not become valid until the critical factor is included.

The term "critical" as here used needs definition. It doesn't mean that one factor alone is essential. Everything that exists is in the last analysis essential to everything else. The keystone in an arch is the critical stone, not because it alone makes the

[1] Charters, W. W. *Curriculum Construction.* New York, Macmillan Company, 1923. p. 26.

arch, but because of its peculiar function in locking all the other stones together. The keystone is no more essential than any of the other stones in the arch and yet in a peculiar and special sense it is a critical stone. So in education, the various duties, qualifications, and skills which are the products of teaching effort must possess an essential unity of organization, and this unity may well be due to the presence of a critical element. Skill may be developed and subject matter mastered in a variety of ways. If, now, only one way involves the development of the critical element, then that way *only* is valid as an immediate objective.

Charters seems to me to assume that the effect on a child of a given unit of subject matter and of a given form of procedure can be predicted with certainty. From my point of view this assumption is not true. There is plenty of evidence to show that effect is determined, also, by the nature of the child and his internal processes. If this is the case, then all our analyses and all our tabulations may be in vain. The critical element is what happens within the child. I do not wish to be misunderstood. Surely no one can justly accuse me of minimizing scientific care in the evaluation of either the materials or the methods of instruction. I acknowledge with gratitude the importance of the contribution Charters and others have made. I have benefited by them and know that many other teachers will also. The danger, however, is that because of the imposing array of contributions to curriculum building which are now being made we may forget that if our fundamental assumption is wrong, much of the rest of what we do may be futile.

Some of us believe that there is evidence to be had to show that *purpose* is the critical factor in the educational process, and that no objectives which leave purpose out of consideration will be uniformly effective. My point is that the mere existence of such a belief in some people necessitates the inclusion in Charters' list of an eighth step which would occupy the third place in the program and become its critical factor. That step is the validation of the immediate objectives of teaching effort, or the proof that the effect produced by teaching effort really functions in life as we expected it would function.

DISCUSSION OF THE FOREGOING PAPERS

AGNES L. ROGERS, *Smith College.*—I shall use the word objective in its strict sense—the immediate goal as contrasted with the ultimate purpose or aim. The reason why educational objectives must necessarily be determined in teacher training has scarcely been indicated in the three preceding papers. Yet it is important to recognize that in every generation it is requisite to reinterpret and to reconstruct our procedures in the light of our ultimate aims because of the development of new facts in our changing world. There is especial need of a re-statement of the objectives of teacher training, today. In the first place, there is a danger of our making unjustified requirements as regards time. In the past it is true we have erred in the opposite direction. Figures were presented after the war which showed that one-fifth of the teachers in elementary schools in this country had had no professional preparation whatever. Today we are more likely to go to the opposite extreme in our schools and colleges of education and to demand an elaborate preparation which would be unjustified at the present stage. We know that other professions have demonstrated a tendency to increase the duration of the period of preparation without apparent reasons. Agriculture, home economics, and engineering are all demanding four years of professional training, perhaps because training for the medical profession requires four years. The extension of time in these instances is due probably to the desire to win the prestige of a well-established profession rather than to any real need for four years in which to gain the equipment essential for success. Signs that the teaching profession is eager to create a body of facts and principles which will justify its claim to a longer and more elaborate process of training are not lacking. The desire for professional prestige is in this case a strong motive and there is a real danger that the demand for longer training than is warranted will pad the courses for professional preparation with unnecessary activities.

In the second place, it is important that we specifically examine the educational objectives for schools and colleges of education, because there has been in the last two decades an enormous increase of knowledge in fields heretofore accepted by the profession as necessary for study by teachers. I refer particularly to the notable development of educational psychology, educational administration, and history of education. More information about current practices in other countries as well as in different parts of this country is now available. To determine how much of this wealth of information concerning schools and educational systems, it is necessary for teachers to know, has thus become a problem. Authorities in each of these fields stress the importance of their own specialty. We are consequently forced to consider the claims of the vast array of facts about individual differences in children, methods of learning, of teaching, and of administration which have recently been brought to light; we must view them sharply in relation to the problem of best fitting a teacher for her first teaching position. Further, the extension of knowledge in general has created a similar difficulty regarding the subject matter with which teachers will have to deal, for it is not possible dogmatically to say what part of the wealth of new ideas and skills discovered in our own lifetime should be presented in elementary and secondary schools. The world has grown richer in art and science, and the objectives of education must reflect the change. Consequently the training of teachers must prepare for the new conditions. Responsibility for the particular selection of experiences which children are to have must rest on our teacher-training institutions. They must, by elimination or inclusion, make the reconstruction of subject matter which is necessary.

We are, in the third place, compelled to consider new educational objectives for the preparation of teachers as a consequence of vital social changes which have actually taken place in our generation. No one denies that the school today is increasingly being asked to undertake duties which were once regarded as essentially the responsibility of parents. In the field of health

education, for example, a remarkable reversal has occurred. The school, today, is in fact educating both parents and children in the ways and means of maintaining a high standard of physical well-being. Thus our objectives in this regard are different from what they were twenty years ago, as a result of complex and subtle social changes quite as much as in consequence of a broadening and deepening of our interpretation of the ultimate aim in educating the young.

Thus it would seem essential that we now, as in every significant period of change either in scientific knowledge or in social conditions, should redefine in specific terms the objectives of education and of teacher training in spite of the fact that fundamentally our educational ideals are closely similar to what they have always been.

As to how objectives are to be determined there can be no question that the method of job analysis, if delimited and qualified carefully, is a genuine contribution. Job analysis in this sense, as Professor Bobbit has indicated, is not a process of determining typical existing conditions of teaching. It is rather the process of analyzing the finest teaching situations. In this way we avoid the danger of adding the sanction to the *status quo*, that Professor Bode fears. We all realize the limitations even of the best teaching extant and we recognize the practical difficulties in the way of discovering the finest teachers. We should, moreover, prefer to think that schools of education determined changes in the curriculum rather than that actual practice in the schoolrooms determined our program for teacher training. There can be no doubt, however, that the method that was used by Aristotle in the fourth century, B.C., to determine objectives in conduct from the general idea "goodness" is an excellent working method. To determine what the specific content of virtue was he examined the opinions and the behavior of a group of men acknowledged to be superior.

There are other ways of determining objectives for teacher training which have long been in use but which have not been mentioned by Professor Bobbit. I shall merely refer to them,

since they are well known. First, it is possible to derive valuable suggestions from the practices of other civilized nations. We all know that German, French, English, and Scandinavian procedures by leading us to comparison and analysis can be of great value. Secondly, the philosophy of education renders us a similar service by providing principles by which we can test our procedures, challenging them where they are inconsistent and modifying them so that they reinforce our ultimate aim. Professor Kilpatrick presented to this society last year a statement of the part that the philosophy of education can play in this respect. It need not be discussed further at this time.

Dean Courtis justly asserts that for the validation of the objectives formulated for teacher training there is no simple and satisfactory instrument. Measurement of the results of instruction by standardized tests is of some value, but such tests cover a very limited field. Indeed, the elements in learning which they include are admitted not to be the most fundamental in the educative process. Dean Courtis contends that the critical factor in learning is the desire to learn. Thus mastery of spelling depends upon the existence of the purpose to learn spelling. He suggests we may be wrong in emphasizing minimum essentials and mechanical drill instead of the development of this purpose. This position seems sound. Nevertheless, one index to the presence of the desire to spell—though not an infallible one—is spelling attainment.

There are other clues to the validation of teacher-training objectives and among these I would include two for special mention. First, we can estimate professional attitudes in teachers. Where we can secure several independent judgments, we can have some slight indication as to whether our teacher-training objectives have been attained so far as attitudes are concerned. Again, we can validate the results of teacher training by seeing what training teachers seek of their own free will after experience in the classroom. We find that to prepare further for their work they seek eagerly after the philosophy of education and educational psychology. They are keen to unify their experi-

ence and to reinterpret it as well as to obtain new aids for classroom work. The fact that they seek more of these subjects, in part validates our inclusion of these in a program for the preparation of teachers. Therefore, while it is true that validation is exceedingly complex, that no single means is adequate, and that tests and measurements are far from supplying us with a perfect instrument for proving the validity of our present methods of training teachers, still we can prevent gross mistakes by utilizing such facts as we have.

Lastly, the solution of the problems of schools and colleges of education depends upon the kind of person entering teaching. Professor Bobbit's analysis of the major fields of teacher activity suggests that to get teachers of such excellence we shall have to follow the first principle of the recipe for hare soup, namely, first catch your hare. Until we can induce a superior type of person to enter teaching we must be content with limited objectives for instructors of limited capacity.

DAVID SNEDDEN, *Teachers College, Columbia University.*—Reference has been made to the place of "ideals" among the objectives of education. But observation of the facts of life shows that ideals, like habits, knowledge, and other types of psychological products, can only be evaluated and produced as *specific things.*

All kinds of people—good and bad, literate and illiterate, of low intelligence and of high intelligence—have ideals. Some ideals spring up like weeds in almost any soil. Others, like rare plants, require the most careful cultivation. Surely it is no less practicable for education, which has as an objective a particular kind of ideal in a known kind of person, to produce that ideal than it is to produce a known kind of habit or mastery of a specified item of knowledge.

But in the determination of the objectives which shall control in curriculum making, we can make little progress in the direction of utilizing or producing ideals—moral, civic, physical, vocational, martial, religious, aesthetic, or intellectual—until we shall have disentangled and designated specific ideals. We shall need

to evaluate them comparatively, to investigate the "natural" or instinctive foundations for them, and, finally, to ascertain experimentally and otherwise the best methods of controlling and producing them.

One other matter has been referred to this afternoon by the second speaker that interests me as a practical matter. Mr. Bobbitt dwelt on the fact that every child is a unique creature from the standpoint of inheritance, that he is being affected by a unique environment, and that he is destined to play his part under unique conditions in the future. Now, of course, that is all true, and Mr. Bobbitt does well to remind us of the necessity in all sound educational processes of always considering each child as an individual. On the other hand it is only too easy to become Utopian in following this line of thought. No two children are ever exactly alike; but many of them are not greatly different, either. No two adult heads are exactly the same size. Yet hatters get along very well by making hats in a score of standardized sizes.

Of 1,000 boys, 12 years of age, it is readily possible in a large city junior high school to make ten groups within each of which the learners are sufficiently homogeneous to provide safe foundations for the making of a variety of courses of instruction—including spelling, French, or no-French, prevocational algebra, baseball as a means of physical development, and the like. In other words there is a golden mean between assuming that all children are identical in nature, environment, and destiny on the one hand, and holding on the other that no two are sufficiently alike for purposes of curriculum making. That golden mean can practicably be assumed in the "case group"—just as it is in making ready-made suits of clothes, children's fiction, or bicycles.

Objective studies will show how we can form fairly homogeneous "case groups" the needs and potentialities of each of which can then concretely be determined. It is no less easy to over-individualize growing children than it is to over-socialize or "herdize" them.

JOB ANALYSIS AND THE TRAINING OF TEACHERS,
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FUNCTIONAL ANALYSIS AS THE BASIS FOR CURRICULUM CONSTRUCTION

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Job analysis is a term which smacks of its origin. It has been taken over from the industrial field where the job is the unit of operation. The term is used rather loosely, and in its application to the general educational field it has come to include not only the manual operations, but activities, duties, problems, difficulties, and thoughts. The function of job analysis is to determine what activities are carried on by individuals in the performance of tasks. It is a deliberate and persistent attempt to apply the method of analysis to constellations of activities from the functional point of view.

As a method of curriculum construction it frankly assumes that the function of a curriculum is to provide material for efficient performance, conduct, and behavior. The method of analysis is not new. The analyst who adopts the functional point of view in curriculum construction merely makes a whole-hearted attempt to apply analysis thoroughly to the situation which he is studying. The term functional analysis is a better name than is job analysis with its restricted connotations.

From our experience in using functional analysis I have gathered a few more or less disconnected observations which may be of use to those who employ the method as a basis for curriculum construction. These I shall present in somewhat dogmatic form.

Functional analysis works most easily with simple operations. It is not a difficult matter to analyze the procedure in making an apron, cleaning a fish, or sawing a board.

As the constellations become larger and the constituent activities become more complex, the analysis becomes much more prolonged and difficult. In securing the list of 871 duties of secretaries it was necessary for us to employ two interviewers for four months, to enlist the cooperation of 715 secretaries, 125 of whom were interviewed privately, and to provide much printed material, and many time schedules. If we were to make an analysis of citizenship to discover the multitude of widely varied duties which good citizenship calls for, we should have a still more complicated and difficult task before us. Functional analysis, therefore, involves a great deal of time, effort, money, and intelligent technical skill.

In making an analysis of vocations it is more convenient to subdivide the vocation into its subordinate types. For instance, if we were making a functional analysis of the superintendent's position, it would be highly desirable to study independently the position of the small-town superintendent, the city superintendent, and the county superintendent. If we were making a functional analysis of teaching, it would likewise be desirable to make independent studies of the primary and intermediate teacher, the teacher of English, of mathematics, or of art. Much is missed in many vocations by treating the vocation as a unit, for as long as the vocation is a constellation of specific and detailed activities, the duties may differ widely according to the different types of position within the vocation.

In complex vocations which involve superior intelligence and skill, such as teaching, where a duty analysis is highly difficult to make, a difficulty analysis may be substituted with practical success. Very frequently where it is impossible for the follower of a vocation to list the duties which he is called upon to perform in the pursuance of the vocation, it is comparatively easy for him to list the duties with which he has difficulty, because the duties may become routinized and slip from his memory, while the difficulties are the basis of his attention and thought. We have found, for instance, in an analysis of department-store salesmanship that a curriculum built upon the weaknesses of depart-

ment-store salespeople provides a quite adequate basis for a course of study for the salespeople. When the investigators recall the trouble they experienced in getting a list of difficulties, they are quite appalled by the task of securing a complete list of the duties of salespeople in the department stores.

The same condition holds for the curriculum in language in the grades. It is extremely difficult to list all the facts of language and grammar which are used in spoken and written English. Not only is it difficult, but it is relatively useless, because many of the "operations" of English present no difficulties. Consequently, it has been found that if an analysis of the errors of English composition, including both oral and written speech, is made, and if these errors, together with methods and reasons for the methods of correcting the errors, are taken up, the result provides us with a seemingly adequate language curriculum for the grades.

The detail to which analysis is carried must be watched in order to make sure that contact with the ability of the student is reached. For instance, one of the duties of secretaries is that of meeting callers, but the analysis of what is meant by this and what one must do in meeting callers may require more detail under one situation than under another. If we have a highly expert person to whom we are giving instruction in the secretarial course, all that it is necessary to do is to list this topic. He makes contact immediately, and proceeds from that point according to his own experience. If, on the other hand, we are teaching students who are not so highly expert, it is necessary to sub-analyze the duty of meeting a caller until the contact point is reached, at which the learner may begin to master the operation.

When a duty is analyzed to its extreme limits, it finally includes methods of performance; that is to say, if we continue to analyze the meeting of callers by describing what has to be done in meeting callers, this analysis carries us to the actual performance of the duty. Consequently, the duty and the methods of performing the duty shade into each other. While we have been in the habit of using *duty* as a name for the unanalyzed activity.

and *method of performance* to stand for a statement of the complete and detailed analysis, it must be remembered that what you have to do and how you are to do it have no clear-cut dividing line between them.

A functional analysis, whether it be a duty analysis or a difficulty analysis, is extremely difficult to make. We found in making a difficulty analysis of department-store salespeople that the executives could not tell, except in the most general terms, what the difficulties of the salespeople were. We received surprisingly meager returns from the salespeople themselves. Only when we sent a trained observer into the departments to watch the salespeople for a period of six weeks and to list the difficulties as he obtained them by observation of the salespeople at work were we able to secure an adequate list. In making the list of the duties of secretaries, we employed two investigators for four months and interviewed 125 secretaries twice, and the interviewers found that their results were dependent upon the cordial and intelligent cooperation of the people interviewed.

Not only are such analyses difficult to make, but they are expensive. The secretarial analysis cost approximately $4,500, and consumed the full time of two investigators for six months, and the major portion of the time of one person for a year. These facts concerning cost are presented because those who use functional analysis as a basis for curriculum construction must face the fact that the work cannot be done upon the usual voluntary, over-time basis by committees of teachers. Expert investigators must give their undivided attention to the task if it is to be adequately performed. But this may be supplemented by voluntary assistance, if too much is not expected of it.

In making a functional analysis of a vocation, interviews are more effective than questionnaires. People instinctively dislike to write. They often lack the time and frequently fail to give enough detail. On the other hand, they enjoy being interviewed by someone who records what they have to say.

Check lists of difficulties are dangerous and must be handled with skill. If we present a list of duties to an individual and

ask him what else he does, the check list is likely to inhibit further thought. Consequently, the list, when used, should always be presented in person and care should be taken to see that the initial inhibition is overcome.

Diaries and time-sheets have been found to be very useful. In making an analysis of the activities of home-makers several hundred individuals kept as complete a diary as possible of everything that they did or thought about for a week. As a result of this study, which went through several preliminary stages before it was released, 4,500 activities of home-makers were collected. Time-sheets were used by secretaries who were asked to count off what they did by five-minute periods during the day for a week. These supplemented the check lists, and revealed a number of duties which were not listed by the use of the other methods.

A trait analysis should always accompany an activity analysis. In building a curriculum it is not sufficient to find out what people have to do and give them instruction in the performance of the duties. Much depends upon traits of personality, such as accuracy, neatness, courtesy, and firmness. As a matter of fact, college-trained teachers who fail in a vocation seldom make a failure because of lack of information or of technical skill. The causes of failure are weaknesses of personality. Consequently, a teachers-training institution must pay direct, explicit, and persistent attention to the development of the proper traits of personality. What has to be done is not so important as how it is done; and the standards of performance are set by the traits of personality and the character of the worker.

Superficial criticism of functional analysis is made to the effect that when we make a functional analysis to find out what is being done and seek to find the best methods of performing these duties, no thought is given to the future. It is claimed that we are building upon present practices and are disregarding the possibilitity of improvement. This criticism is superficial, because functional analysis will work as well in Utopia as in a traditionally controlled situation. The Bolshevik can use functional analysis as effectively as the fundamentalist. In the one

case the investigator works with Bolsheviks; in the other case he works with conservatives. In the first case he inquires what the Bolsheviks do and how they do it; while in the second case he discovers what the conservatives do and how they perform their tasks. Moreover, he is able not only to tell what they do, but, theoretically, he can describe the best procedure in each case from each point of view.

There is only one way of getting ready for tomorrow. It is impossible for us to know what will be the duties and the methods of performing them in the next generation, when those who are now elementary-school children have become the directors of the efforts of the age. We could not, then, teach them these methods if we wanted to. The school must, of necessity, consider the problems and duties of today and give the best methods of solution and performance. We care for the future in a quite different manner—we teach the children how to think for themselves. All that we can do is to teach the best methods that we know for 1924, and in teaching these, teach the children the technique of reasoning and problem solving, and trust that when they meet the new situations of the next generation, they will be able, as a result of this training, to think out for themselves the best methods of meeting these situations.

Finally, the curriculum is composed of units which are controlled by the following formula—*AIPRTE*. Each activity (*A*) is controlled by an ideal (*I*), whether that ideal be high or low. The method of performance of an activity is determined by the accuracy, neatness, openmindedness, and courtesy of the performer. It is also carried on with due regard to persons (*P*). In the home-makers' diaries 60 percent of the things that the home-makers did were explicitly done for or with other people. In the abstract sciences, such as mathematics, the *P* element is reduced to a minimum. Furthermore, when this activity, controlled by its proper ideals, is to be performed in connection with persons, reasoning (*R*) is used to plan the proper method of carrying on the activity. In some cases the plan is the important element in the activity. In other routine and simple situations

reason is reduced to a minimum and may completely disappear. After the activity has been planned, it is carried out with a certain technique (T). Not only is it necessary to plan an activity with regard to persons and the proper ideals, but it must be performed, and this factor is taken care of by the T element. Finally in the performance of the act there is an emotional or affective element (E), which constitutes the atmosphere in which the activity is performed. This emotional quality colors the experience of the action, and is frequently the single element which makes for its success or failure in life.

By way of illustration it may be said that some teachers take into account in their teaching only two of these elements—the A element, and the T element. They merely get the person to perform the activity. They overlook the fact that the efficiency of an act is dependent upon ideals, upon thinking, upon the personal elements that enter in, or upon the emotional reactions of the pupils. In life any one of these factors may make or break the effectiveness of a situation. The ideals may be wrong, the activity may not be adapted to the social situation, no planning or thought may be put upon the operation, and the emotions may be anti-social or mentally unhygienic.

During the discussion which followed the reading of this paper three points were brought out which I wish to discuss briefly. The point was made that in making a duty analysis of a vocation we list the things that the follower of a vocation needs to do, but we omit what was called the marginal responsibilities of the vocation. If, for instance, we have a list of the duties of registrars, we are not likely to secure a complete picture of all that he does in the way of influencing policies around his institution. The answer to this statement lies in the fact that a functional analysis of a vocation, if it is carried out to its practical limits, will include not only routine duties and regular duties which involve judgment and action, but the important marginal responsibilities as well. An analysis which does not include these is an incomplete analysis.

The further point was made that if we use a functional analysis as the basis for a curriculum, we discover what has to be done and teach how it is to be done without making allowance either for the best methods of performing the duties or for the duties that will arise in the future. The answer to this objection is entirely clear. When a complete list of the activities of a vocation has been secured, it is entirely reasonable to expect that the best methods of performance will be collected where they are known. This takes care of the present. So far as the problems and activities of the future in a vocation are concerned, nobody knows what they will be, and therefore, they cannot be taught. There is only one way in which the future can be taken care of, and that is to teach the student not only the best methods of performing present activities, but to teach him so thoroughly the technique of thinking and problem solving in connection with the learning of present duties that when he is confronted with new problems and new activities in the future, he can use his reason to work out the best possible solutions.

There is no other possible way of meeting the future under any kind of curriculum. All that the school can do is to teach the best that the present generation has and trust to future generations to use the most careful technique of reasoning in meeting their problems. If we taught merely the best methods of the present day without teaching the technique of thinking, the objection might hold; but it is entirely met when problem solving is used as the fundamental method of instruction.

Finally, functional analysis is a method of investigation rather than a philosophy of education. Analysis can be used in connection with any point of view. If efficient citizenship is considered to be the aim of education, functional analysis will be used to determine what shall be taught just as it will be used if the making of money is made the aim of education. The philosopher sets up the aim, and the analyst provides only the technique for working the aim down into the terms of a curriculum.

ANALYSIS OF TEACHING AND TEACHERS

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There are three main types of analysis of teaching and teachers, each of which has its strength and its weakness. It is the purpose of this paper to describe each type.

TYPE I. ANALYSIS THROUGH CORRELATING TEACHERS' SCORES ON TESTS WITH THEIR TEACHING SUCCESS

Here we are concerned with the simple problem of determining who the good teachers are. This type of analysis is not interested primarily in what teachers do or ought to do. The results of this kind of research will not yield explanations as to why a teacher is good or poor, or of what goodness or poorness in teaching consists. We shall know through this type of analysis that this teacher is good; that one, poor; and another, mediocre. Such facts are useful and perhaps are all that we need for the practical work of engaging, dismissing, and promoting teachers. Our knowledge of teachers or ability to improve teaching will not be increased by this kind of research.

The basis of this type of teacher analysis is the finding of tests the scores on which are high for good teachers and low for poor ones, or low for good teachers and high for poor ones. With such tests provided, we should define a good teacher as one making certain scores on certain tests, while a poor teacher would be defined as one who makes still other scores on these tests. This type of analysis need not be limited to tests. If we could find any other constant unit of measurement to which good and poor teachers reacted differently, such a unit would serve satisfactorily. The procedure of research here is to determine the relative merit of each member of specific groups of teachers, and to keep testing these teachers until we get a test on which the scores correlate significantly with success.

The elements of such research are: (1) the derivation of true merit in actual teacher groups, (2) adequate sampling of

teacher groups, (3) the construction of reliable tests, (4) the construction of tests which correlate highly with teaching success.

No single test or fact may be sufficient. If we had several tests each of which correlated with the criterion, but not with the other tests, then we could combine and weigh these several measures by using the partial regression equation and get a multiple R useful for selection, promotion, and dismissal.

This type of research is theoretically sound and entirely possible. Sufficiently true measures of various amounts of teaching merit are obtainable through a prudent use of rating schemes. It has the following good features: (1) The adequacy of sampling can be determined statistically. (2) Reliable tests can be constructed. (3) Valid tests (that is, tests which correlate with the criterion) are, I am certain, obtainable through competent experimentation. (4) It is allowable from the viewpoint of statistics to combine several tests and thus obtain a more complete knowledge of merit than that yielded by any one test.

The present status of this type of research may be briefly described by certain of its limitations. Through ratings of superiors, fellow-teachers, and pupils measures of merit have been obtained sufficiently reliable to use in the formulation of salary schedules, as the basis of dismissal and promotion, and as criteria by which to judge tests. Age, sex, years of experience, amount of professional study, ability on tests of subject matter, penmanship, and letters of recommendation are, at present, apparently useless for the measurement or prediction of gross teaching ability. Mental test scores in the case of high-school teachers promise to be of more value than those of elementary-school teachers, while the professional test scores of elementary-school teachers are more significant than those of high-school teachers. Scores on the Knight-Franzen Professional Test for Elementary-School Teachers correlate positively and significantly with success in classroom teaching. I consider that the improvement of the professional test as a selection device is at the present moment the most promising lead in teacher selection.

There are many pitfalls in rating schemes—we do not know how many—but some have been discovered and those who rate

teachers should be on the lookout for them. The analyzed rating card—a snare and a delusion—is the first pitfall. What we get when we ask a supervisor to rate a teacher on 40 items in the supervisor's general estimate expressed in 40 ways. We cannot get real analysis because we cannot analyze. The correlations between the estimates of obviously unrelated traits are almost uniformly absurd. Thorndike with ratings of engineers and Knight with ratings of teachers conclusively demonstrated this tendency. The way to avoid this pitfall is to use the superior technique of a few ratings by many judges instead of many ratings by a few judges. Another danger, demonstrated by Knight and Franzen, is the tendency to over-rate oneself or under-rate one's competitor. This pitfall exists in all forms of application blanks and questionnaires. Of course the amount of over-rating might be used as a measure of self-confidence, self-respect, or unfortunate conceit. The way to avoid this pitfall is not to waste time asking a person about himself *in any form*. His answers may be true or may be the opposite of the truth (a suppressed wish), partly the truth, or an index of his cunningness in guessing what answer will please.

Knight and Franzen also indicate the inability of competent judges to measure the same people on an objective scale. Judges who are presumably equally competent rate the *same* person as almost wholly honest, half honest, rather dishonest, or an out-and-out cheat. This disagreement is the product of legitimate variations in knowledge about the person and of *varying standards of honesty* held by the judges themselves. The way to avoid this pitfall is not to use a rating involving concepts of virtues, but a system of ranking persons according to their relative merits. The question should be not, "How honest is he?" but "Is he more or less honest than this person or that?" Knight, in a study of over 1,000 ratings, discovered a hinderance which he called the Acquaintance Factor, for he found that long acquaintance destroys keenness of judgment. This is an adequate explanation for this. It may be avoided by ascertaining how long a judge has known the subject to be rated and by discounting for a long period of acquaintanceship.

At the beginning of the discussion of the first type of analysis, it was implied that little insight into the specific nature of good teaching could be gained by the correlation method. The work of Dr. Whitney in accounting for variations in teaching merit by a partial correlation technique gives most hopeful indications that genuine analysis is forthcoming. By using finer and finer measures in his equations, he obtains definite ideas as to what kinds of facts and skills account for success. As this procedure goes on we shall know more clearly just where even further analysis will yield the truest explanation of teaching merit.

Type II. Analysis Through Detailed Studies of Teachers

The fundamental procedure of this kind of research is to study a group of good teachers and to list all the facts with their frequencies, to study a group of poor teachers and list all the facts with their frequencies, and to determine the significantly alienated facts.

The facts to study are unknown. Many of them may not be apparent to superficial consideration. A few tentative examples follow of the type of facts to be studied as applied to good and poor teachers:

Length of verbal question used in recitation.
Legibility of blackboard handwriting.
Number and intensity of interests which compete with teaching.
Time taken to buy a pair of shoes.
Content and length of evening prayers.
Section of newspaper read first.
Number of yeast cakes eaten per week.
Content of dreams.
Time spent in preparing a lesson.
Nature of lesson preparation.
Confidence in the divine wisdom of textbook writers.
Ratio of supporting strength of foot to total weight.
Ability to understand pupil difficulty.
Susceptibility to temporary fatigue.
Neurotic tendencies leading to delusions of persecution, grudges, etc.

There would be perhaps 200 other carefully measured facts which the writer is unable to state.

This type of research should indicate to us what kind of person a good teacher is and is not. This knowledge should consist of facts as to intellect, temperament, character, skill, physique, social nature, emotional traits, interests, aversions, beliefs, prejudices, and whatever else makes up the entire person as a person. The group of educational "Sherlock Holmses" required for this type of research doubtless exists, but so successful are their incognitos that they are not listed in the educational blue-book. There are, however, several "Watsons" at work.

Type III. Analyzing Teaching Through Determining What Pupils and Subjects Need from the Teacher

The basis of this type of research should be the scientific determination of what pupils need from a teacher and what subjects or textbooks need from a teacher to make them effective. We could then define a good teacher as one who does certain needed things and nothing else, and a poor teacher as one who fails to do what is necessary and does do what is unnecessary.

Here again we know all too few facts to proceed swiftly with research. Years of work with pupils, subjects, and textbooks must precede the final contributions of this third type of study. Such research has started and is growing every year.

In discussing the third type, I will content myself with a few illustrations. Suppose we knew that it was best for a fifth-grade pupil with an I.Q. of 120 to learn how to divide fractions by studying a focalized reading lesson on the division of fractions. The good teacher would be the one who furnished the focalized reading lesson and then kept her peace; the poor teacher would be the one who taught fraction division from the blackboard, no matter how well. Suppose also that we knew that insight into science or mastery of the subject matter of general science were best gained by having pupils study under the direction of a teacher who had had experience with the uses of science in industry. Then the good teacher would be the one who had worked in a chemical laboratory, or a soap factory, or the beam house of a tannery, or the like, while the poor teacher would be the industrially unsophisticated one, although he might be a master of

everything that had ever been done in a high-school laboratory or written in a syllabus of high-school science.

Let us suppose that a group of competent experts have decided that the teacher should put to the class certain questions on the material given in pages 264 to 271 of the history text. Then the good teacher would be the one who asked these questions; and the poor teacher would be the one who asked a different set of questions or else none at all.

Suppose we knew that topic D in the citizenship text is best assigned as a home lesson in a definite series of sentences and questions, to be determined by future research. The good teacher would use these sentences and questions; while the poor teacher would use some other form of assignment.

Analysis of the third type involves knowing what responses ought to be made to the thousands of complicated teaching situations, and then teaching the teacher to make the correct response to each situation. The teacher who makes the most correct response is the best teacher. This type of analysis, although it is largely in the future, will probably give us more control of the educative process than the other two types of teacher analysis.

To summarize: The first type, correlation of teachers' scores on tests with relative teaching success, is possible; some tests are now available, while better ones can be evolved; and the use of finer measures suggests that further analysis will be successful. There are several dangers to be avoided in rating teachers. The second type, the detailed study of good and poor teachers as persons, consists of ascertaining in what significant ways teachers differ. It requires a technique that has for the most part not yet been developed; but when this technique is attained it will give us control over the improvement of teaching. The third type, determination of the specific responses that teachers should make to specific situations, must be preceded by more knowledge of what good teaching really is. It will give us more control over education than either of the other types.

In the end, Type III will serve us best. For the solution of the immediate problems of selection, promotion, and dismissal Type I, however, seems to be the most promising.

SOME ASPECTS OF THE JOB ANALYSIS OF HIGH-SCHOOL TEACHING

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This brief presentation is not to be regarded as an attempt at a complete exposition of either the theory or the practice of job analysis as applied to high-school teaching. It is rather a statement concerning a few studies with which I have had some connection and which appear to have some bearing on job analysis.

THE WASHINGTON STUDY

When in 1917 Dr. Clifford Woody and I, at that time colleagues at the University of Washington, planned our little study, asked President Suzzallo for a modest sum to finance it, and pressed through the work of tabulation and of writing the report, we did not speak of it as a research project in job analysis. As for myself, the jargon of this special procedure had by that time scarcely more than reached my ears, much less worked its way into my vocabulary. Being responsible for portions of the work prescribed for the training of high-school teachers, we naturally gave some thought to the relation of teacher preparation to subsequent teaching responsibilities. In talking the problem over together from time to time, we expressed a common need for more information; and we finally decided to work cooperatively in gathering it. The report of our study of almost five hundred teachers in the high schools of Washington made its appearance in the *Eighteenth Yearbook of the National Society for the Study of Education*. We subsequently recognized that we had made what in some important respects was a venture in job analysis.

THE MINNESOTA STUDY

During 1921-22, a similar but more extended study of high-school teachers—this time in Minnesota—was made by P. W.

Hutson, now assistant professor of secondary education in the University of Pittsburgh. The report of his study has recently been published as one of a series of Educational Monographs launched last year by our College of Education at Minnesota. The findings of Professor Hutson's study closely correspond to those of the Washington study. They lead to identical inferences, and suggest that similar conditions exist in other states.

Three types of facts will be cited from Professor Hutson's report, namely, the numbers of different subjects taught by each teacher, the combinations of subjects taught, and the amount of preparation for these subjects.

Number of subjects.—In tabulating the numbers of subjects taught by each teacher the usual departmental lines of cleavage as they are found in colleges were followed. For example, each of the following was regarded as a subject: English, mathematics, Latin, French, Spanish, history, political science, economics, chemistry, physics, home economics, music, and commercial subjects. As was to be expected, a large majority—71.3 percent, in fact—of the teachers in the largest high schools (those with thirty or more teachers) were privileged to teach a single subject. About one-fifth of them were teaching two subjects. In the next group of high schools—those with staffs of more than ten and less than thirty—the proportion of one-subject teachers was much reduced but it was still well over fifty percent. Slightly more than a fourth of the teachers in schools of this size were teaching two subjects while about one-tenth were teaching three subjects.

When, however, one considers the teaching load of those who belong to high schools with 10 instructors or fewer, one finds a marked increase in the spread of work for which a teacher is responsible. Less than a third of the teachers in schools of this size give instruction in but one subject, almost as large a proportion teach two subjects, almost a fourth teach three, and fully a seventh teach four. The situation in the last group is even worse.[1] The significance of these facts is especially apparent when one

[1] This group consists of "high-school departments."

bears in mind that our inexperienced graduates first secure employment in the smaller high schools.

Combinations.—A study of the combinations of subjects in which teachers are endeavoring to give instruction, adds to the feeling of discouragement created by the data just submitted. The variety of combinations is almost endless. Even among the 294 two-subject combinations, 87 appear only once, i.e., are non-recurring. Of the 176 three-subject combinations, 120 are non-recurring. It appears that, even if teachers were prepared to give instruction in three subjects, there would be little likelihood of their finding positions corresponding to their preparation.

Preparation.—The third type of fact referred to is in harmony with those already illustrated. With teachers giving instruction in so many subjects and in such a diversity of combinations, the amount of college work in preparation for some of the teaching work must of necessity be small. For instance, half of those who taught botany in high schools of ten teachers or less had seven semester-hours or less of college work in that subject, while a fourth had 4.6 hours or less. Among teachers of civics corresponding figures were 3.8 and 1.7 semester hours; among teachers of history, 18.0 and 7.5 semester hours. Many of these teachers were without any collegiate preparation for the subjects they were teaching.

Dean Haggerty has likewise investigated the extent to which teachers teach different subjects. His method involved finding the proportion of time devoted to each subject by a given teacher; and his data support those we have given above.

Suggestions Relating to Training

These findings from Washington and Minnesota prompt a number of inferences, some of which are in the nature of adjusting the training to the job. The most important of these merit at least a brief statement.

(1) A most obvious recommendation is that high-school teachers-in-training be prepared to teach a *larger number of subjects,* in some combinations as many as three or four. To some

who have given thought to the problem, this seems to mean a longer period of training than the four collegiate years required for the first degree. In view of the difficulty, however, of raising the standard to five years, we ought clearly to see what can be done along the lines of this recommendation within the present college period. Not only should students be advised to prepare to teach more than a single subject, but suggested and required curricula should be provided with this end in view. Within the last two years we have published in a bulletin of our College of Education plans for a composite major or curriculum in natural science designed to prepare a teacher to give instruction in all the sciences in a small high school. In the social studies a composite curriculum of similar intention has likewise been organized. (I know that we have students registered for these majors, but I am not prepared to state the present number.) It may be added in this connection that favorable requirements and opportunities for certification will be helpful in securing teachers trained with reference to more than one subject.

(2) Another unequivocal inference is the need of something like adequate *guidance* for our students in selecting their teaching combinations. Our systems of guidance for teachers-in-training lean too heavily on subject-specialists; and they are slow to appreciate the needs of the situation. To cite a single example of questionable advice, I may refer to a student now registered in a course with me whose major and minor subjects are, respectively, German and sociology. This student is a senior. We must have better guidance and it must begin early—earlier certainly than the third year of a student's college course.

(3) The chaos in combinations suggests efforts toward a *standardization of combinations* in our teacher-training institutions. It is not enough to recommend or prescribe preparation for a larger number of subjects. Unless we agree as to what subjects should be grouped into combinations, and unless we graduate students fitted to teach these combinations, the chaos is certain to continue. Professor Hutson carried his study far enough to show that certain combinations seem ready to emerge from

present conditions. He found beginnings of this in the natural sciences and in the social studies. His findings in this respect are in harmony with the action in our college to provide for composite majors in these groups.

Suggestions Relating to the Job

Anything like a full consideration of the problem, however, makes clear the fact that we shall not get very far without, in addition to modifying the training to fit the job, at the same time modifying the job. This is where we must break with the job analyst in industry. I find among the job analysts in industry no suggestion that the job may not be just as it should be. The assumption seems to be that whatever is in industry is right.

(4) In this connection it may properly be asked whether the subject-distribution of teachers on the job—especially in the small high school—is as it should be. Is the principal or superintendent making the best use of the special preparation of his teachers in assigning subjects to them? There can be little advantage in insisting that teachers-in-training prepare to give instruction in three or four subjects, these to be in certain standard combinations, unless the job itself recognizes them. It is apparent, moreover, that there must be agreement between the training and employing agencies as to what the standard combinations are to be. Heads of schools must be consulted, so that necessary adjustments may be made within the schools where the teaching is done. On account of the rather free movement of teachers from one state to another, it is imperative that the standardization of both the training and the job be effected over an area wider than that of a given state. We cannot stop short of having agencies national in scope undertake this task.

(5) It is also evident that the high-school program of studies with its designations of required and elective subjects can affect significantly the relation between the teacher's work and his preparation. On account of a marked shift within the last decade or two in our conceptions of the values of certain subjects, the proportion of "constants" in high-school programs is at present

relatively small. Correspondingly, the variable portion of the high-school program is large. Programs of study, however, seem just now to be emerging from the curricular chaos in which very few units have been required and to be manifesting a tendency to specify a greater number of constant units in the social subjects and the natural sciences. It does not seem out of place for teacher-training agencies, if they agree as to the nature of this shift of emphasis, to encourage it. With larger proportions constant and with more nearly general agreement in the schools on what is constant, the task of standardizing subject-combinations should be considerably simplified. There is no intent here, on the other hand, to argue for complete prescription of the high-school student's work.

(6) Another means of affecting the job in order to make adequate preparation for it more nearly feasible is to discourage the multiplication of very small high schools. On account of the sparseness of population in certain areas we shall perhaps always need some small high schools, just as we shall always need some one-room rural schools. To admit this, however, is by no means to admit the necessity for as large a proportion of very small high schools as are now to be found in some of our states. Small high schools mean small teaching staffs, and these in turn mean impossible subject combinations.

(7) The final means of modifying the job so as to bring it within the range of reasonable preparation is provision in the smaller communities for a six-year secondary school. As long as we have four-year high schools whose entire curricular offerings must be presented by two, three, or four teachers, so long must we have a large proportion of teachers attempting to give instruction in subjects for which they have had insufficient preparation. This will be true despite our best efforts to standardize combinations. It must be manifest that the extension of the high-school organization downward into the seventh and eighth grades in these smaller communities will do much to improve the situation. The benefits of such reorganization are already being demonstrated where teachers of art, music, home

economics, and manual training give instruction in their subjects both in the high school and in the upper grades. The reorganization referred to will carry this type of subject-distribution to other fields, such as English, mathematics, the sciences, the social studies, etc. Certainly, teaching a single subject or closely related group of subjects over a wider range of grades is more nearly practicable than to teach a number of relatively unrelated subjects in fewer grades.

These instances of approaches to *job modification* call attention to the danger in our field of following without change the procedure which has been typically used in industry, the procedure, namely, of first discovering what tasks a worker is required to do and then giving him the preparation for performing them. The work of job analysis we must do, but, in addition to endeavoring to fit the training to the job, we must inquire whether the job is as it should be. In a significant respect, therefore, those who plan and administer the training of high-school teachers have a present advantage over those who train workers for industry. It is generally admitted to be a part of our concern to propose changes in the schools as well as to prepare workers for them. It will be some years before the instructor of candidates for positions in industry can be as influential.

Related Studies

This paper will be brought to a close by brief mention of a few other studies which we in Minnesota have encouraged or undertaken, studies which have some relation to job analysis in teacher training. Professor Hutson, this year on leave of absence from Pittsburgh, is making what seem to be important extensions of his study already referred to. For example, he is testing his earlier conclusions as to teaching conditions in the small high school. He is making for California and western Pennsylvania studies similar to those made for Washington and Minnesota. California is represented because he desires to note the influence of the higher qualifications for certification in that state. Another extension deals with the degree

to which principals and superintendents assign subjects to teachers with sufficient consideration for their preparation. This involves a study of schedule problems in small high schools, with a view to discovering recurring conditions which are likely to cut across plans in teacher preparation. An important additional line of inquiry will be an investigation of the content of the college courses taken by teachers-in-training in relation to the content of the high-school courses which they afterwards teach. Inquiries so far have been concerned only with the semester-hours of work a teacher has had in preparation for the subjects he teaches. Professor Hutson's present plans are to restrict his studies along this special line to the natural sciences and the social studies.

Miss Rewey Bell Inglis, who is responsible for the supervision of student-teaching in English and for a course in the teaching of high-school English in our college, is undertaking a study of the relationship of the English teacher's training to her work. She has not yet determined on all the details of her procedure, but one portion is almost certain to deal with English in the same way that Professor Hutson is dealing with the natural sciences and the social studies. Professor Lathrop of the Division of Agricultural Education in our College has made a somewhat different approach by undertaking the job-analysis of oat growing with a view to helping the teacher of vocational agriculture to learn what content should be introduced into the courses taken by boys in training for farming. The plan is, if the procedure turns out well, to apply this type of analysis to other kinds of farm production. Mr. Homer J. Smith, of the department of Trade and Industrial Education, spent a large part of the school year 1922-23 in visiting the manual arts departments of the high schools of Minnesota and in studying conditions. His purpose was not only to find ways to enhance the usefulness of these departments in the high schools but also to learn what preparation to give those who go out to teach in them.

Some other projects having a more or less intimate bearing upon job analysis in the training of high-school teachers are likewise under consideration.

THE NEED FOR ANALYZING THE MARGINAL RESPONSIBILITIES OF PROFESSIONAL WORKERS

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Assuming that previous discussions have covered the importance and technique of analyzing the professions and the implications of the findings in the construction of the curriculum and the arrangement of courses of study, I shall limit my remarks to the need for including in such analysis the marginal areas and responsibilities of professional workers.

By implication, at least, in the phraseology of the general topic for this meeting, "Job Analysis in Teaching," the marginal responsibilities may be excluded from consideration, for marginal responsibilities, as late. described and illustrated, cannot be classified as "jobs." Yet unless marginal areas are adequately considered when analyzing the professions, the outcome of the enterprise cannot be as constructive for these higher pursuits as for the trades.

For the trades, the incidental responsibilities which, in this discussion are referred to as "marginal" are important but not crucial; for the professions they are far more important and also crucial. If by the application of analysis in the occupations comprising what is loosely called the "teaching profession," we merely make the obvious explicit, or if we merely penetrate deeper into the technical aspects of the work performed, we create a photographic picture correct in line and form, but entirely lacking in color, action, and attitude. Depressing as it would be to look at such pictures of the professions, to use them as foundations for educational programs would be a calamity. While the marginal responsibilities, by contrast with other responsibilities, are usually of a higher order, more remote, and less concrete, nevertheless they are sufficiently tangible to illustrate.

Those interested in college administration have been turning the searchlight of inquiry upon the position of the registrar in an attempt to promote efficiency and partial standardization of

procedure, as well as to learn how to organize instructional facilities for young men who will later fill such posts.

Quite naturally the first step is to ascertain what the registrar does. To answer this we turn to the analyses which have been made; we find lists of unit tasks the sum total of which represent the items for which the office of the registrar is directly responsible and presumably for which he is employed. These include: arranging for and registering the students; preparing blanks and forms; conducting the information bureau; editing catalogues; answering general letters of inquiry; compiling and publishing statistics; preparing and issuing diplomas, degrees, and certificates; preparing examination schedules; reporting grades to students; reporting status of freshmen to preparatory schools; inspecting and accrediting high schools; acting as secretary to college committees and to the faculties; and scores of other activities of similar type, too numerous to list.

From the studies of the registrar thus far made, the composite picture of this official is that of a technician. How would this picture be modified by examining his marginal activities?

In the absence of such an analysis let us draw upon our own observations. In the University of—almost anywhere will do—the English Department for years has been planning to employ an instructor interested in journalism, with the hope that he may offer a journalistic course to senior students and that ultimately a School of Journalism may be established. Finally, the instructor is employed. In order to move with due caution and safety, he is given the title Instructor in English, with the tacit understanding that he will offer a course in journalism. The president of the University and the head of the Department of English happen to meet at lunch at the Faculty Club, and the conversation drifts to the proposed course in journalism. The registrar enters the dining hall, looks about for a seat, is observed by the president, and is invited to join the group. The conversation is resumed. "By the way," says the president to the registrar, "you will be interested in what we were discussing: it is proposed by the English Department that a course in journalism be offered next year. Professor ———, who has just come, is

interested in this field and has time to develop the course. Now we have not discussed this in detail with the faculty as a whole, but you know what the faculty's attitude is likely to be, and besides you went to the University of ——— last winter and incidentally visited their School of Journalism. What do you think about it?" The registrar believes that the University should keep up to date and he thinks journalism is a very important field, but he sees difficulties and suggests: "Professor ———is not well known as yet to the faculty. Everyone likes him and regards him highly but he has not written much himself and only a few members of the staff have heard him lecture. It might not be fair to him to ask him to undertake such difficult work the first year—better wait till next year—besides Dean ——— of the School of Journalism, where I visited last winter, has serious doubts about the place of journalism in a university such as this, and while he may be a bit too conservative he has studied the matter carefully and advises caution." The head of the English Department presses his point for a few moments, and then concludes not to start journalism this year.

Instances of this sort occur daily in every institution in the United States. While the registrar is a technician, he is also a policy-maker. In fact, he probably plays a more important part in determining policies than any one else in our institutions save the president and the controller. It is a fact that he has enjoyed the position of "policy-maker under cover" in the past, and it is reasonable to assume that he will continue to occupy quite as important a place in the future. Of all college officials, the registrar is in the best position to see each part of the institution in its relation to the whole. This, coupled with the fact that his office is usually close to the president, and that the president looks to him for facts, inevitably results in the registrar's being a confidant of and adviser to the president. If the registrar is naturally conservative, he exerts his influence to keep things as they are; if, however, he is progressive he exerts his influence accordingly. But if you analyze only the responsibilities which can be charted and which lend themselves to visual presentation, you are forced to the conclusion that he is a technician. If

you review his marginal activities you find he is a policy-maker or an educator. It is only when you include both technical and marginal that you see the official as he is—an educator—influencing policy and performing highly technical tasks.

To build a program of the training for registrars on the assumption that they are to be technicians only means emphasis on how to prepare blanks and forms, how to edit announcements, how to organize an office, and employ and supervise an office force. To build a program upon the assumption that they are educators means emphasis, during the period of preparation, on the historical development of colleges and universities, their place and function in democratic society, their service relations to the states, their general organizations and administration, the control and the curricula of professional schools, and the like. A program built on the foundation of a true picture of this official, including both conceptions just described commends itself to those who wish this official to realize all of his inherent opportunities and obligations for the highest type of technical service as well as for educational leadership.

Further illustration may clarify my point. For the past decade there has been nation-wide interest in continuation education—education for employed minors. Twenty-six states now require youths of certain ages who have left school and who are working for wages to attend continuation classes for a portion of each working week. Every school of education in the country has felt, to some degree, the pressure for training teachers to serve in the continuation schools which are springing up everywhere. Again we naturally ask, before attempting to devise a plan for training, What are these teachers to do? We examine the law to see what it says about the new schools, particularly their functions, and what the requirements are for the certification of teachers. We review the pronouncements issued by supervisors and directors to discover what shall be taught; and finally we visit the teachers to find out what they are doing.

What are the results of these inquiries? The law reveals that for youths under sixteen years of age the chief function of the

continuation school is to remove marked deficiencies in general education—reading, writing, arithmetic—and to teach citizenship. One state law, and only one, includes social and vocational guidance as a required function. We also discover that the laws usually require teachers in general continuation schools to hold either regular elementary- or secondary-school credentials. The bulletins issued by supervisors clearly indicate that it is expected that the youths should be taught how to spell, to read, to write, to make out sales slips, to make simple arithmetical computations, and to be familiar with the government of city, state, and nation.

The visit to the teacher in the classroom completes the preliminary survey. She is drilling on addition, or perhaps fractions; she is directing the writing of letters of application to prospective employers; she is reading a stimulating chapter from the biography of a captain of industry who has succeeded in the truest sense; she is discussing some of the big issues of the coming state election, the source of the water supply, or the work of the local fire department. If the analysis stops here, as it likely will, the picture of the continuation-school teacher is that of a mature woman, instructing skillfully in the fundamental subjects of the elementary school. In so far as she needs special training it would likely be concluded that she should study the psychology of adolescence, methods of teaching common-school branches to youths, methods of teaching civics and the organization and management of special classes. In fact, if you look at the courses for continuation-school teachers now being offered, the conclusions here anticipated are not far from reality.

But the analysis of the continuation-school teachers' work was terminated too abruptly. The thoughtful teacher asks herself concerning every continuation-school youth under her control whether he should be in the continuation school or in the regular school and what are his daily occupational problems which the school can help him meet. She is also interested in whether his employer has assigned him to an appropriate task. Other questions which confront the teacher regarding each pupil are, What are his health hazards which the school should assist him to safeguard? Are his relations with his parents whole-

some? Can the school help him discover how to use his leisure more constructively? Is he spending his earnings recklessly? Exactly the type of questions which a big-hearted, educated parent has in mind continually for his own children. And if you follow the teacher who raises such questions after the close of the school period, you will find that she visits the homes and enjoys the confidence of parents, that she knows employers and assists them in understanding and appreciating the youths they employ, that she analyzes juvenile occupations, that she studies occupational hazards, and that she is the companion and confidant of the young people of her class.

Thus the picture of the teacher changes. She becomes, aside from instructor in common-school subjects, coordinator, counsellor, and friend. The significance to educators of this last picture of the continuation-school teacher, in contrast to the first picture, is obvious. It aids us in seeing that maiden ladies with receding dispositions should not work in continuation schools; that successful elementary teachers need training for this field. They will need to study occupations, to learn how to approach and to gain the confidence of employers and parents, and will need further development of human sympathies.

Dozens of other illustrations showing the importance of analyzing marginal responsibilities in the educational professions could be cited. These would include the teacher of economics, chemistry, physical education, and home economics, the supervisor of special subjects, and the city superintendent of schools. In fact, every calling in the field of education from janitor to university president has these less tangible responsibilities constituting rare opportunities for service, which when discharged give us justification for regarding education in a different light from the trades.

Now that the method of analyzing technical responsibilities seems to have been perfected to the point of usability, our efforts should be directed to broadening the field by including the marginal areas. When this has been done, and not before, will occupational analysis yield its full contribution to the teaching profession.

THE PROFESSIONAL CURRICULUM OF THE COLLEGE OF EDUCATION IN THE LIGHT OF JOB ANALYSIS OF TEACHING

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The term "job analysis" has so many different meanings that it may be well for us to state briefly the way in which the term will be used in this discussion. Kitson distinguishes[1] between (1) "vocational analysis," the analysis of a profession, such as teaching in all its phases, (2) "occupational analysis," the analysis of a specialized occupation within a profession, such as that of an English teacher in a high school, and (3) "job analysis," the analysis of a particular operation within an occupation, such as grading composition papers. While it might be very helpful to keep all these clearly in mind, we shall here use the term "job analysis" to include all three types of analysis.

The purpose of all education and training is to provide preparation for efficient participation in the activities of life on as high a level as is possible or desirable for each individual. Without attempting to defend or attack this statement, we may accept it as indicating the basic principle of teacher training.

The first question that concerns us is "What are the activities for which teachers must prepare?" This involves the listing of the various so-called occupations included in teaching and also the listing of the specific activities or duties that each teacher has to perform. The second question is "What are the facts, knowledges, habits, and skills, that are deemed necessary, directly or indirectly, for efficient participation in these activities?" The third question is "How and when shall the preparation be given?"

Job analysis attempts to answer the first two questions and can undoubtedly be of real assistance in solving the problems

[1] Kitson, H. D. "Trade and job analysis as an aid in vocational curriculum building." *The Twenty-third Yearbook of the National Society for the Study of Education*, Part II. Bloomington, Illinois, Public School Publishing Company, 1924. p. 239.

that arise. It often attempts to go beyond this and tries to classify activities under certain heads; to group together facts, skills, etc., for training purposes; or even to name and determine *qualities* supposed to be essential for the efficient performance of duties. While it is no doubt true that job analysis can materially assist in the organization of facts and activities, it cannot be too strongly urged that job analysis, as such, can never determine the organization of facts, skills, or activities for training purposes. This is distinctly a teaching problem and must be determined by the psychology of the learning process as applied to the individual student. Closeness of connection in time or place of activities, or facts, or skills, or even logical connection, should not be the determining factor in organization for teaching purposes.

The determination of the so-called qualities necessary for successful teaching is extremely hazardous. We have at present no means of accurately determining qualities, nor do we know to what extent qualities manifested in one situation will carry over to situations of a different kind. Again, the so-called qualities are usually complexes, made up of various elements. Success or failure may be determined as much by variation in the amounts of these elements as by the mere presence or absence of any element. Job analysis may be useful if directed to the analysis of those elements that make up qualities, but otherwise it will be of doubtful assistance.

Several attempts have been made to analyse teaching both as a vocation and as a group of definite jobs. Some of these have already been reported before this society, while others are now in the process of formulation. I shall not attempt to give in detail the results of these analyses. In general they show a great and almost bewildering variety of activities in which teachers engage and a great variation of duties and activities in what is supposed to be the same teaching job or occupation. They vary from the simplest operations, such as adjusting the window shades or sharpening pencils, to the most complex and difficult duties in connection with the teaching process, with guidance

work, and with the construction of courses of study. They show that teachers, even under supervision, participate in varying degrees in activities that come logically under the head of administration. They assist in the formulation of curriculums and courses of study, in teacher rating, in the fixing of salary schedules, in the selection of textbooks, and even in the examination of new teachers. They interview parents, visit homes, help conduct stay-in-school campaigns, assist in propaganda for the authorization of school bonds—all these and more are part of the day's work for the teacher. These analyses show clearly, as Charters has pointed out, that it is often much more difficult to list and analyse activities or duties than to determine the difficulties of efficient performance.

Turning to the professional curriculum now in operation in our schools and colleges of education, let us see whether we can detect any indications of the job-analysis point of view. Where and in what way would this be indicated? We should be likely to find evidence of such an influence, if it is present at all, (1) in the actual subjects of the curriculum, (2) in the origin and development of these courses, and (3) in the organization of the material in the various courses.

The Course in the Professional Curriculums

This subject really has two aspects: (a) the courses offered by the institution; and (b) the courses taken by students.

The courses offered.—Many surveys have been made of the professional offerings in our schools and colleges of education. One of the most recent is that made by Edward L. Hardy and reported by W. C. Reavis.[2] From the long list of so-called "professional" subjects there given, the following are selected as most useful for our purpose: (1) history of education, (2) philosophy of education, (3) principles of education, (4) educational sociology, (5) the curriculum, (6) administration, (7) social psychology, (8) educational psychology, (9) general

[2] Reavis, W. C. "The determination of professional curriculums for the training of teachers for secondary schools." *School Review*, 32:27-35, January, 1924.

methods, (10) supervision, (11) educational measurements, (12) mental tests, (13) special methods, (14) practice teaching. Practice teaching is not included in the list as given by Reavis, but without doubt is among those listed.

It is obviously impossible to determine from the name of a course whether it has been affected in any way by an actual list of activities and duties, such as would appear in a job analysis. We can, however, distinguish in general two groups of courses. One is composed of the older "standard" courses, so-called because they are the ones most frequently and graciously recognized by our colleagues across the way, the academicians. They are history of education, philosophy of education, and principles of education. Included in the other group are educational measurements, mental tests, special methods, and practice teaching. They are the newer subjects in our collegiate life. The first group represents, on the whole, the general, "cultural," fundamental subjects in which there is little if any attempt at specific application. The second group stresses direct application. In the foregoing list the courses are arranged roughly according to the presence or absence of these two elements. From this point of view we may say that the job-analysis idea is more evident in the second group. The fact that they do stress direct preparation for more or less specific activities is the chief reason for the opposition to them on the part of our academic colleagues.

The courses actually taken.—A consideration of the courses actually taken by students throws little added light on the situation. In the study by Reavis, history of education and educational psychology head the list with practice teaching and special methods following. The same order is indicated in the excellent study by Hutson of the training of high-school teachers in Minnesota.[3] It might be well to place beside this the subjects that Hutson found were considered by superintendents in Minnesota to be essential for the preparation of teachers. Practice teaching and educational psychology head this list and methods and his-

[3] Hutson, P. W. *Training of the High-School Teachers of Minnesota.* Minneapolis, University of Minnesota, December, 1923 (Educational Monograph No. 3).

tory of education follow closely. We find, then, that both general subjects and "practical" subjects occupy a prominent place in our curriculums, but evidently the general subjects are feeling to an ever-increasing degree the competition of subjects involving direct application to teaching needs. Undoubtedly this competition will continue. Will the result be the elimination of the older general subjects?

The source or origin of the subjects.—Considering the list of subjects already given, we can be sure that those at the head of the list were organized long before any attempt was made to secure a definite list of the activities or duties of teachers and especially to analyze these activities into their elements. They developed out of philosophy and often still retain some of the marks of their parentage. It is not, of course, assumed that they were introduced without reference to teaching needs; it is only asserted that these needs were not clearly analyzed and that the activities were not listed. Let it not be supposed that I am opposed to these subjects or that I am not conscious of their value. It may well be that we cannot do without them in our professional curriculum. I am only maintaining that in their origin they do not show the influence of job analysis. On the other hand, the subjects at the bottom of the list all show definitely that activities and duties are clearly in mind.

The organization of material in the courses.—We have already said and wish to reaffirm that job analysis, as such, has nothing to do with the organization of material in a course, but nevertheless we can, I think, judge from the organization whether the results of job analysis have been consciously in the minds of those who put together the material.

Professional training contemplates preparation for efficient participation in a profession—in this case the teacher's job. This involves the acquisition of facts, the formation of habits, and the development of skills—what Charters calls "activities." All these must be of such a nature as actually to function in the teaching job. This means that they must be developed in such a way and in such circumstances that they can and will be used

in the daily work of the teacher. On the other hand, we have ideals, attitudes, and interests, called by Charters "ideals," that control action in varying situations. Definite facts, habits, and skills are useful and important as preparation for situations that recur with sufficient regularity and similarity to make desirable relatively unvarying responses. Ideals, attitudes, and interests are useful and important when new situations arise or when for any reason varying responses become necessary. Activities and ideals are both absolutely necessary elements in the training of teachers, and each follows naturally from the job-analysis viewpoint. It seems fair to say, however, that if in the organization of course materials those calculated to produce ideals largely predominate, job analysis has not been kept clearly in mind. Perhaps it would be more nearly correct to say that when we organize courses with the sole purpose of developing ideals, we are likely to lose sight of activities and to place in the courses materials that cannot be justified as part of the preparation for activities. Ideals have a tendency to develop on broad general lines and to become of little value in practical situations.

Turning again to our list of subjects we can clearly see the difference in the organization of materials. Practice teaching is largely organized from the standpoint of activities. Philosophy of education and history of education as it is usually taught are organized from the standpoint of ideals; this is their greatest contribution. Most of the other courses are mixtures varying with the point of view of each particular teacher. A tendency apparent in the organization of practically all the courses in the list has a direct bearing upon this whole question. This is the tendency to develop each course into a science. We are now developing a body of facts and principles that are being organized into a science of administration. Other facts and principles constitute a developing science of method, and so on with each of the other subjects.

This is a very interesting and in many ways a useful tendency, but it has real dangers. A science has a node or core around which facts and principles are grouped; it is not im-

mediately concerned, at least in its organization, with applications. It often aims to provide the principles that control conduct, but it does not furnish the habits that constitute control. When materials in a course are organized on this basis, it is assumed that those who master these principles and ideals will carry them over into actual practice, and will control their actions in accordance with them, without specific training in putting them into practice. There is, I feel sure, a very real danger that we shall become so absorbed in making a science out of our subject that we shall neglect to develop the skills that we all know are so necessary. Another danger already pointed out is that in the process of developing a science much material will be included which is necessary to the development of the science but which cannot be made to function in the experience of the teacher. This is notably true in the history of education and is becoming apparent in some of the new "sciences." In making this criticism I do not wish to be understood as decrying the value of a search for general principles underlying conduct or of including these principles in the training of teachers. I have been led to stress principles, or ideals, rather than applications for three reasons. First, we have had in our systems of training very little opportunity for direct contact with actual teaching situations. We have had to develop training courses apart from the teaching job. Second, we have apparently been forced to give individuals what is supposed to be full and complete preparation for the teaching job before they had any experience on the job. This made it necessary to stress principles and ideals rather than habits and skills. Third, the individuals in our classes go out into positions so different in their nature and duties that it is impossible to develop all the skills that are necessary.

The organization of materials in our courses shows a tendency to lose sight of or neglect the point of view of job analysis. We need to be continually brought back to the necessity of preparation for participation in real activities. Possibly a single illustration will be sufficient to make clear my meaning. In the

past few years a great mass of material has been collected bearing upon the problems grouped under "administration." Under the direction of some of our own members this material is being organized in an orderly, logical, scientific way and principles are being developed. This is very wholesome and very helpful. But what is the job for which this material is to prepare? The general answer is "The job of the administrator." But who is the administrator? He is supposed to be the superintendent. But is he? Does the superintendent himself actually perform the duties and activities that are to be governed by these principles? We are told that in any good-sized city the efficient superintendent does most of the work through cooperation of forces—he doesn't do the work himself. Does he have to do things, important things such as securing cooperation, delegating authority, etc., that are not covered by the principles? Who does the things that he, as the administrator, is theoretically supposed to do and that in practice he delegates to others? And do these to whom he delegates these duties receive the training they need for their work? Principals, heads of departments, and even classroom teachers—the last to an increasing degree—have to do many things covered by "principles of administration." In other words, the job as it is, even that of the classroom teacher, necessitates participation in activities listed as administrative and governed by principles taught only in a course in administration and often only to superintendents, or organized especially for them. The courses are not organized primarily from the standpoint of the job.

It would be interesting in this connection to discuss the common types of organization of departments within a college of education. We have both horizontal and vertical departments in the same institution. We have history of education, administration and supervision, and general methods. We also have secondary education, elementary education, normal-school training, etc. The second group cuts squarely across the first. Which is the better type? Is either effective from the standpoint of the real job for which we are trying to prepare teachers?

Job analysis will help us in the organization of courses and materials in courses by making us keep continually in our minds the job—the thing that each one has to do. Then when we have organized our courses it will make us go back to the job and see whether the training given by our courses has actually prepared the prospective teachers for their jobs. If it has not, reorganization and a change of methods must be brought about.

In my judgment a careful consideration of job analysis of teaching will result in certain changes in our procedure. First, there will be more opportunities for direct contact with teaching situations for those preparing to teach, while they are taking their professional training. Second, the reduction of amount of professional work required from inexperienced students will be reduced. Third, certification laws may be enacted by which added preparation would be required of teachers after they had begun to teach. The courses developed for this purpose might well stress principles and ideals that would interpret their present experiences and guide them in improving their teaching. This would necessitate a considerable expansion of our facilities for extension work and the maintenance of definite standards for such work. Fourth, real supervised practice teaching may be developed—definite training in habits and skills, as well as in ideals, on the job.

THE PROFESSIONAL CURRICULUM OF THE COLLEGE OF EDUCATION IN THE LIGHT OF THE JOB ANALYSIS OF TEACHING

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I am in substantial accord with all that Professor Jones has said. There are, however, certain important aspects of analysis which I think properly fall within the scope of his subject, some of which he has not considered, and all of which merit further attention.

In the first place, as he has pointed out, when curriculums in schools of education are being organized, it is desirable to analyze as carefully as possible the vocations for which such schools are supposed to prepare men and women, the various occupations within these vocations, and the numerous so-called jobs within each occupation. We certainly need to determine more accurately than before what types of behavior are actually involved in the successful selection and control of the means and materials of education in any particular teaching situation.

In the second place, it is equally important to determine more thoroughly and accurately the personal qualifications, knowledges, skills, habits, attitudes, interests, ideals, and perspectives needed to control successfully the types of behavior that any given educational job requires. This study of personal characteristics and qualifications can hardly be called job analysis in the proper sense of the term. It is a different type of study and calls for a different method and a different technique; but job analysis, in the limited sense, cannot carry us very far in planning the work of a school of education unless it is supported by this kind of study. We not only need to determine what the job or vocation requires, but we should also know better than we do the personal traits and the peculiar educational equipment, both general and professional, that are possessed by those who are highly successful in doing the job. We need to know how to discover these things in the individual and also to what extent their presence may be deter-

mined by professional training. Some knowledge of this kind is available in biographical material, but it is meager and inadequate. A technique should be developed and applied by which the personal characteristics, professional equipment, and experience of hundreds of the most successful teachers, supervisors, principals, and superintendents can be satisfactorily analyzed and the results made available for the training of men and women for these occupations. A great deal of extremely valuable material that could be obtained in this way is now being lost.

In the third place, perhaps the most important need of the college of education is the analysis of its own job. It is not enough, as Professor Jones has indicated, to know the job of teaching and the qualifications necessary for successful teaching. We need to know the extent to which such qualifications can be secured by professional education and also to what extent and in what ways the means and materials of education may best be selected, organized, and applied to accomplish this result. It is manifestly true that curriculums for the training of teachers cannot be wisely planned without due regard for the various conditions that greatly influence the extent and quality of the work done by a college of education. Some of the prominent conditions are as follows:

1. The amount of time to be covered by the curriculum obviously places a limit on what may be undertaken; much more can be accomplished in four years than in three or in two. The length of the course will necessarily affect the objectives and the organization of the work to accomplish them.

2. The native capacity of the students entering the college and the character and extent of their previous education will also influence the curriculum. Much more can be attempted with students whose capacity and general education are of a high order than is possible with those of only average or less than average ability. Curriculums may be planned for capable students with more assurance that they will take advantage of opportunities for their general and professional education after they have begun teaching. It is also true, as experience has

proved, that such students are more likely to acquire a truly professional attitude toward the problems of teaching and to take an interest in their scientific study and solution.

3. The probable length of professional service that will be rendered by graduates of the college of education should also materially affect the curriculum. If the average tenure of the graduates is likely to be short, emphasis will necessarily be placed on turning out those who will be efficient as soon as they begin to teach. The fields of service for which such students are to be trained will be more restricted, and more time will be devoted to the attainment of specialized professional knowledge and to the analysis and mastery of special features of teaching technique. Supervised observation and practice teaching will play a larger part. If, on the other hand, the average tenure is to be comparatively long, it will be more important to turn out graduates who can and will develop in service. The curriculum in this case will be more extensive with more time given to cultural subjects, to the theoretical aspects of teaching, and to the function of education in modern life.

4. The relation of the college of education to the field service in the city or state into which its graduates are sent should exert a great influence on the curriculum and on the quality and success of the work. This relationship should keep the faculty of the college of education in touch with the problems to be faced by its graduates and should assure the assistance of superintendents, supervisors, and principals in the analytical study of these problems. It should also keep the school officials acquainted with the spirit, aims, and problems of the college of education. Cooperation between the college and the superintendents with their assistants will eliminate a great deal of misunderstanding and unnecessary effort. This relationship ought also to affect the problems of time allotment and of relative emphasis on different subjects in the college of education. It should influence the training of graduates in service and should assist in determining the types of work with the cultural and professional qualities required for each type. In

short, colleges of education should enlist as far as possible the services of field workers in the analysis and solution of these problems.

5. The relation of pre-service to in-service training is of vital importance in determining a professional curriculum. There is at present a marked general tendency toward a four-year course of pre-service training for elementary as well as for high-school teachers. A careful analysis of the job of teacher production at the present time should be made to determine whether or not this movement is really a wise one. Undoubtedly much more can be accomplished by the college of education in four years than in two or three years; but it is a question whether under present conditions it would not be wiser to set up a four-year objective for elementary teachers, but to provide that the work of one or two of these years may be done in service. There is much to be said in favor of such a plan. The cost of the pre-service education of teachers would be very much less; a higher standard of admission to the college of education could be more easily maintained; and a more capable body of students could be secured. The professional education of teachers in service could be more varied, better adapted to their needs, and more effectively directed. Teachers could be more successfully guided in finding the fields of service where they would be happiest and most effective; better cooperation between the college of education and the field service could be secured; more intimate relations could be established between the college and the high schools from which its students are chiefly obtained; more extensive use could be made of accessible colleges and universities as auxiliary agencies of training, with great advantage to the service and less expense to the people; and finally, the danger of drawing teachers away from, rather than into, a vital interest in elementary education could be avoided because their professional education while in service would be carried on in such close contact with the actual problems of teaching and with such a realization of elementary education as a factor in American life that their interest in their profession and their scientific attitude toward it would be deepened and intensified.

The question here is not whether a four-year post-high-school course of general and professional education is desirable for elementary teachers. Few will deny that it is. The problem is that of finding the proper relation of pre-service to in-service training in the practical administration of such a course. The job analysis, therefore, of teacher training in any college of education would involve a number of critical studies to determine the presence and influence of the foregoing conditions. Studies should be made (1) to determine the native capacity of students entering the college of education and the desirable methods of securing students of high average ability; (2) to determine the extent and quality of the previous education of such students and the most effective procedure to follow in improving or supplementing it; (3) to determine means of effective cooperation between the college of education and the field service of the state or community that it serves; (4) to determine methods of securing better cooperation in the education of teachers between colleges of education and other accessible colleges and universities; (5) to determine by means of a thorough job analysis the technical requirements of the various teaching positions for which training is provided; and (6) to determine the place and function of elementary and secondary education in American life.

Such a study of the job of the professional education of teachers would influence in several ways curriculum organization in colleges of education. It would certainly result in the inclusion of the following subject matter:

(1) Materials that will help prospective teachers to understand and appreciate the fundamental interests of present-day life. The problems of the American people are growing more complex every year so that those who are now being trained in the schools will have to deal with greater questions than has this generation or any other. Since the solution of such problems will depend upon citizens who for the most part have not had more than an elementary education, it is easy to realize the tremendous responsibility of the elementary schools. It is profoundly important, therefore, that teachers should have a much fuller and richer knowledge of these matters than can be expected

of their pupils. They need the poise and perspective which comes with this training not only for its effect on their pupils, but also for its effect on the relative emphasis which they will give to the different materials and aspects of the course of study.

(2) Materials that will help prospective teachers to understand the place and the function of elementary and secondary education in modern life. It is very important that in the task of education all the educative agencies of the community shall reinforce as far as possible the work of the public schools. Teachers who are trained to see the relative position and importance of these agencies will be prepared to assist in establishing the best relations between them and the schools.

(3) Materials that will help teachers to appreciate the dignity and importance of the level of education at which they work. An attitude should be developed in the teaching profession like that which already exists in the profession of medicine. No well-trained physician who devotes himself to the treatment of children regards himself as inferior to one who deals with adults. Teachers of children should not consider their work professionally less worth while than the work of high-school teachers or even that of teachers in colleges and universities. The problems of elementary education are quite as serious and quite as important as those of higher education; and they require the same scientific ability for their solution.

(4) Materials that will help teachers to understand the system in which they are placed and their relations to their associates and official superiors. Teachers are coming to take a larger and larger part in the determination of school policies and in administrative work. If this new responsibility is to be properly met, it is necessary for each teacher to see her part of the work in its relationship to the tasks of her co-workers and of her superiors in the system.

(5) Materials that represent the best results of job analysis in the technique of teaching, and in the skills, abilities, and knowledges that are most important in the professional training of teachers, supplemented by ample opportunity for supervised observation and practice teaching.